



E/CNMC/005/18 STUDY ON THE IMPACT OF AIRFARE DISCOUNTS IN NON-PENINSULAR TERRITORIES

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EXECUTIVE SUMMARY

The air transport sector is essential for the economic and social cohesion of the extra-peninsular territories, given that there are no real transport alternatives offering similar conditions in terms of immediacy and frequency for routes connecting these territories with each other or with the peninsula or other international destinations. Therefore, there are various measures in place to support the connectivity of the autonomous communities of the Balearic Islands and the Canary Islands and the autonomous cities of Ceuta and Melilla. These aim to facilitate air transport for the population of these regions, compensate for their peripheral geographical situation with respect to the rest of the country and foster their social cohesion and economic development.

Among them is the partial discount on plane tickets for residents of the archipelagos and autonomous cities on direct scheduled routes between these territories and the rest of the country, as well as for inter-island travel.¹

It consists of a 75% discount on airfare² that is applied directly to passengers on tickets issued by airlines. The airlines then submit settlements for the discount coupons flown to the Directorate-General of Civil Aviation of the Ministry of Transport, Mobility and Urban Agenda (DGAC). Once these are verified, payment is then made to the airlines.

The fare discount system coexists with other aid for air transport, notably public service obligations (PSOs).³ PSOs may consist of continuity, regularity, capacity or price obligations. Such obligations may only be imposed in the case of services that operators would not provide on the basis of their commercial interest and provided that they are necessary to ensure the service or to ensure its provision under certain frequency, price, quality or universality conditions. Until 14th March 2020,⁴ within the Canary and Balearic archipelagos, 16 inter-island routes, and one more between Menorca and Madrid (during the winter), were subject to PSOs. They include obligations regarding frequency, timetables, capacity and reference fares for the companies operating there.

¹ Measure regulated by Royal Decree 1316/2001, of 30 November, regulating discounts on fares for scheduled air and maritime transport services for residents of the Autonomous Communities of the Canary Islands and the Balearic Islands and the Cities of Ceuta and Melilla, and by the thirteenth additional provision of the Act 17/2012, of 27 December, on General State Budgets for the year 2013.

² The fare for the scheduled service is the price paid by passengers for their transport and luggage, including but not limited to applicable taxes and fees, except for the infrastructure usage fee and safety fee.

³ Regulated in Spain by Act 2/2011, of 4 March, the Sustainable Economy Act.

⁴ This date marked the passing of Royal Decree 463/2020, of 14 March, declaring the state of emergency for the management of the health crisis caused by COVID-19.

The design of aid available for air transport in the extra-peninsular territories has changed over the years. Thus, the percentage discount on the ticket price enjoyed by residents has gradually increased: from the 1980s to 2016, it represented between 10% and 50% of the fare; in July 2017, it was increased to 75% for inter-island journeys; and in July 2018, it was increased to 75% for journeys to/from the rest of the country.

Following this last increase in the discount percentage, the CNMC received requests from the DGAC and the Government of the Balearic Islands urging it to study price behaviour, competition in island passenger air transport markets, and the possible impact of changes in the subsidy system on these, questions which this study seeks to answer. Therefore, this study focuses on air passenger transport between the peninsula and island territories, as well as inter-island routes.

The CNMC has carried out a theoretical and empirical analysis of the design of air connectivity support systems for island territories, focusing on airfare discounts. To this end, the CNMC has held meetings with DGAC, the Independent Authority for Fiscal Responsibility (AIRef) and experts from academia.

It should be noted that the analysis carried out by the CNMC is based on data prior to the declaration of the state of emergency on 14th March 2020, in response to the health crisis caused by COVID-19. Therefore, the market situation following the declaration of the state of emergency and the measures taken are not analysed.

From the theoretical analysis of the different measures available to support island connectivity, it follows that these may produce a number of undesirable effects, beyond improving connectivity, which the competent authorities must take into account when designing and evaluating them. In the specific case of partial airline ticket discounts, demand from resident passengers is stimulated by reducing the final price they pay, which can lead to higher airfares, so that part of the aid to residents is transferred to airlines in the form of higher revenue. This partial transfer of the subsidy may take place, at least in the short term, even in a perfectly competitive environment. However, the rise in demand and fares increases the profitability of routes, which may encourage new operators to enter and, in the face of increased competition, the upward pressure on prices will be contained. The final effect will depend on the specific characteristics of demand and supply, as supported by the available empirical evidence, so that the impact may be different in each case.

As for the empirical analysis⁵ carried out by the CNMC, although direct causality cannot be established with the methodology applied, it is possible to see that, immediately after the last increases in the discount percentage, there were significant changes in the behaviour of some market variables.

Thus, on routes **between the islands** (both the Balearic Islands and the Canary Islands) **and the peninsula**, raising the discount to 75% in July 2018 was accompanied by a marked increase in the average price of tickets purchased by residents (before applying the discount) in relation to trends in the rest of years between 2016 and 2019. This appears to indicate that, in the case of these routes, **a portion of the discount may have been transferred to prices**. This transfer may be motivated by the sharp increase in demand by residents and possible adaptation problems on the part of supply, at least at certain times of the day or week. In the case of non-resident travellers, the tickets purchased have not become as expensive as in the case of residents, as the former seem to have altered their consumption patterns to protect themselves from price rises, increasing how far in advance they buy tickets.

However, **this price increase is not seen in the case of inter-island routes**, where there is no significant discontinuity in fare trends starting in July 2017, when the discount raised to 75%, despite the resulting significant increase in demand by resident travellers.

Different **supply factors can explain this difference in behaviour between routes**. Firstly, in the case of inter-island routes in the Canary Islands, just after the discount was increased to 75%, a new operator entered the market, which may have served to contain price increases. However, the operator announced its exit from the market in 2019, so the implications of the increased discount may be altered. Also, on inter-island routes, **load factor** of flights has been lower than on islands-peninsula routes, so airlines have had more room to absorb increases in demand. Secondly, at a good number of Spanish airports, there have been **congestion** problems for at least some periods of the day, week or season,⁶ and it is more common for island–peninsula routes to run between more congested airports than in the case of inter-island routes.

In any case, in the long term, airlines are more easily able to adapt their supply (over the last decade there has been a good adjustment of supply to variations in demand), increasing flight frequency and number of seats, thus easing the pressure on prices.

⁵ The study of the different island routes was done using aggregates: Balearic Islands–Peninsula, Balearic Islands inter-island, Canary Islands–Peninsula, and Canary Islands inter-island.

⁶ IATA (2019).

Furthermore, demand from resident travellers has been driven up quite considerably in all groups of routes, and in no case is there a decrease in non-resident passenger's demand, so it can be concluded that after the increase in the discount percentage to 75%, **connectivity improved**. However, although there is no decrease in demand from non-resident travellers, there are changes in their consumption pattern, increasing how far in advance they buy tickets.

Finally, **the economic cost to the State doubled** in all route groups within one year of the percentage increasing to 75%, reaching 563.1 million euros in 2018. And it is expected to exceed 765 million euros in 2019 (while it had remained stable and even decreased between 2008 and 2016). In addition to the raise in the discount percentage, this sharp increase is a consequence of higher demand from residents in the case of inter-island routes, and also of higher fares in the case of routes to and from the peninsula.

Given the price pressure the partial airfare discount appears to have generated on the island–peninsula routes, the CNMC proposes a series of recommendations to try to minimise it.

First, the indications of the transfer effect to prices as a result of the latest increase in the discount percentage, at least for the island–peninsula routes, should be cause for reflection by the authorities. It is advisable to **assess measures** to increase price sensitivity among residents (such as limits on the amount of the discount, more restrictions on the items that can be discounted, ex post settlement systems, or indicating the total ticket price to increase awareness of the total cost of the trip).

Secondly, it is necessary to **consider the entire support system** for island connectivity as a whole and to review it on an ongoing basis from the perspective of efficient economic regulation principles, in order to ensure that it is optimal. For example, certain aspects of the PSO scheme in force in the period under consideration impose restrictions that could be reconsidered, such as limitations on the load factor of flights or the method for setting reference fares, as they may lead to inefficiencies and discourage competition.

Finally, it is also advisable to **assess other possible aid mechanisms** to compensate for the isolation of residents on the Spanish archipelagos, such as a system of tax exemptions for residents, not linked to travelling.⁷

⁷ CNMC (2017).

1. INTRODUCTION

In recent decades, several measures have been put in place in Spain to support the connectivity of the autonomous communities of the Balearic Islands and the Canary Islands, as well as the autonomous cities of Ceuta and Melilla. These seek to facilitate air transport for the population of these areas, as well as to compensate for their peripheral geographical location with respect to the rest of the country, with the ultimate aim of promoting social cohesion and economic development in these territories.

One of the most important support measures is the partial discount on airline tickets for residents of these areas, which is applicable on routes between the autonomous communities of the Canary Islands and the Balearic Islands, the autonomous cities of Ceuta and Melilla, and the rest of the country, as well as inter-island travel. This discount, which was established in its current configuration in the 1980s, increased progressively to 50% of the ticket price from 2007 to 2017. The most recent changes in this system occurred in July 2017 and 2018, when the discount percentage increased to 75% for routes between islands, and between the islands or autonomous cities and the rest of the country, respectively.

Connectivity support measures, whose aim is to make air transport cheaper for residents, can have a number of additional effects. In the case of partial discounts on airline tickets, one of the most important effects that can occur is a rise in ticket prices, so that part of the aid to residents is transferred to airlines in the form of higher revenue. According to economic theory, this partial transfer of the subsidy can be expected to occur, at least in the short term, even in a perfectly competitive environment.

Therefore, in November 2018, the Directorate-General of Civil Aviation (DGAC), part of the Ministry of Transport, Mobility and Urban Agenda, and the Government of the Balearic Islands asked the CNMC to analyse price behaviour and competition in the island passenger air transport markets, as well as the possible impact on them of changes in the subsidy system.

This paper thus addresses the behaviour of the different variables in the air transport market in the Balearic and Canary islands, both inter-island and between the islands and the peninsula, and in particular, variation in airfares, in order to gain perspective on possible effects of the recent increase in the discount percentage.

In addition, other possible alternative measures to support island territories, are examined from the standpoint of efficient economic regulation, with the aim of identifying the possible effects they may have on the market, in order to provide guidance to competent authorities on designing the support system for connectivity.

The specific aim of this study notwithstanding, the CNMC has previously analysed other issues concerning the Spanish airport sector, in the July 2014 Study on the Spanish Airport Sector ([E-2014-02](#)), and air traffic services, in the October 2018 Study on Air Traffic Services in Spain ([E/CNMC/002/18](#)), which include recommendations for the broad introduction of greater efficiency in airport management and flexibility in supply conditions to adapt to changes in demand.

Finally, it is important to note that the analysis carried out by the CNMC is based on data prior to the declaration of a state of emergency on 14th March 2020, in response to the health crisis caused by COVID-19. The study does not address the impact of measures taken since then in relation to air passenger transport.⁸

In order to conduct this study, the CNMC held meetings with the DGAC, the Independent Authority for Fiscal Responsibility (AIReF) and experts from academia.

This document is organised as follows. After this introductory section, section 2 contains a legal description of aid for island air transport in Spain, giving an overview of the various existing measures and their regulations, with particular attention to the system of partial discounts on airline ticket prices for residents.

Section 3 contains a study of the development of the different variables in the air transport markets among the islands of the Balearic and Canary archipelagos, as well as between the islands and the peninsula, between 2008 and 2018, with the aim of obtaining an economic description allowing us to determine the behaviour of these markets.

⁸ In order to address the health crisis, and pursuant to Royal Decree 463/2020, of 14 March, the Ministry of Transport, Mobility and Urban Agenda issued successive ministerial orders with a considerable impact on air transport:

- Order TMA/247/2020, of 17 March, establishing the transport measures to be applied to connections between the peninsula and the Autonomous Community of the Balearic Islands.
- Order TMA/246/2020, of 17 March, establishing the transport measures to be applied to connections between the peninsula and the Autonomous Community of the Canary Islands.
- Resolution of 20 March 2020, of the Directorate-General of Civil Aviation, establishing the conditions for the provision and direct award of air transport service on the Palma de Mallorca–Menorca and Palma de Mallorca–Ibiza air routes during the state of emergency declared due to COVID-19.
- Order TMA/273/2020, of 23 March, issuing instructions on the reduction of passenger transport services.

These ministerial orders prohibit flights to or from airports in the archipelagos and set the routes and frequencies of the flights permitted, thus replacing the parameters governing the sector prior to the declaration of the state of emergency.

Section 4 deals with the economic effects that different measures may have in their various implementations, from a theoretical point of view, as well as the most important factors on which they depend. It also describes the international situation with regard to aid used by different countries to improve the connectivity of peripheral or remote regions, focusing on those countries that use different forms of price discounting.

Section 5 studies the development of the different variables in the island air transport markets since 2016 in more detail, with special emphasis on price behaviour, in order to detect trends following the increases in the discount percentage.

Lastly, sections 6 and 7 present the conclusions of the analysis and the recommendations to achieve the best possible design of the aid system for connectivity in Spain.

2. LEGAL DESCRIPTION OF AID FOR ISLAND AIR TRANSPORT IN SPAIN

The establishment of systems of aid for transport to and from the islands is intended to ensure economic and social cohesion in all the State's territories. In fact, Article 138.1 of the Spanish Constitution requires that the 'circumstances of islands' be taken into account. In this regard, having adequate and suitable transport services is essential for regional economic growth, as it protects territorial cohesion and boosts the economy by promoting various economic activities, including tourism.

It is for this reason that the State intervenes through different mechanisms to ensure adequate connectivity for island territories, both among them and to/from the rest of the country.

In Spain, one of the most important aids for the transport of people to or from the Canary Islands or the Balearic Islands is the partial discount on the ticket price for passengers residing in the islands. In addition, other measures apply, such as public service obligations, lower airport fees and aid for establishing new routes.

These measures to support island air connectivity are regulated in a legal framework defined at two levels: Europe and Spain. At the European level, the basic regulations are set out in articles 107, 108 and 109 of the *Treaty on the Functioning of the European Union*, Article 51 of *Commission Regulation (EU) No 651/2014 of 17 June 2014 declaring certain categories of aid compatible with the internal market in application of articles 107 and 108 of the Treaty*, as well as *Regulation (EC) No 1008/2008 of the European Parliament and of the Council of 24 September 2008 on common rules for the operation of air services in the Community*.

At the national level, Article 149 of the Spanish Constitution establishes the exclusive competence of the State in matters of air traffic and transport. In addition, each form of support for connectivity is governed by specific regulations, such as *Royal Decree 1316/2001, of 30 November, regulating the fare discount for scheduled air and sea transport services for residents of the autonomous communities of the Canary Islands and the Balearic Islands and the cities of Ceuta and Melilla*, and *Act 2/2011, of 4 March, on Sustainable Economy*, which regulates certain aspects of transport services in the public interest and public service obligations.

The specific regulations governing each of the policies to support air connectivity applied in the Spanish archipelagos are presented below. It should be noted that, although this study focuses mainly on the partial airfare discount for residents, given the existence of other complementary measures, a second section will be devoted to them, with the aim of providing a complete picture of the range of measures promoting the connectivity of the two archipelagos.

2.1. Partial airfare discount for resident travellers

The aim of the system of partial discounts on fares for scheduled air transport service in the Balearic Islands and the Canary Islands⁹ is to ensure suitable connectivity for residents in the island territories by reducing the cost they pay when making air journeys, reducing the economic impact pertaining to islands, and thus promoting a fair economic balance between the various parts of Spain.¹⁰ Thus, island residents benefit from a percentage discount on their airfare for inter-island travel, as well as journeys between the islands and the rest of the country.

In the European Union, discounts on air transport services for residents fall within the State aid scheme contained in articles 107, 108 and 109 of the *Treaty on the Functioning of the European Union* and Article 51 of *Commission Regulation (EU) No. 651/2014 of 17 June 2014 declaring certain categories of aid compatible with the internal market in application of articles 107 and 108 of the Treaty*, declaring social aid for transport of residents in remote regions compatible with the internal market.

In Spain, the legal regime for the discount is set out in *Royal Decree 1316/2001, of 30 November, regulating the fare discount on scheduled air and sea transport services for residents of the autonomous communities of the Canary Islands and the cities of Ceuta and Melilla*. The royal decree regulates the scope of the discount and its implementation. Finally, *Additional provision thirteen of Act 17/2012, of 27 December, on the General State Budget for 2013*, introduces some amendments to the discount system, extending the scope of application of the discount, establishing procedures for checking requirements, and imposing new obligations on airlines.

2.1.1. Airfare discount system for residents

The fare discount on scheduled service¹¹ applies to Spanish citizens, citizens of the other Member States of the European Union, States belonging to the

⁹ The discounts also apply for residents of the cities of Ceuta and Melilla, and there is a similar discount scheme for resident fares for sea transport, although all this is outside the scope of this study.

¹⁰ Act 19/1994, of 6 July, amending the Economic and Tax Regime of the Canary Islands; Royal Decree-Law 4/2019, of 22 February, on the Special Regime of the Balearic Islands; Royal Decree 1745/1998, of 31 July, on subsidies for inter-island air transport for residents of the Canary Islands; and Royal Decree 1746/1998, of July 31, on subsidies for inter-island air transport for residents of the Balearic Islands.

¹¹ The fare for scheduled service is the price that passengers pay for their carriage and luggage, including, but not limited to, applicable taxes, fees and charges, except the infrastructure usage fee and security fee (art. 2.4 of RD 1316/2001).

European Economic Area and Switzerland,¹² their family members who are nationals of third countries benefiting from the right to residence or the right to permanent residence, and nationals of third countries who are long-term residents and provide proof of their status as residents of the autonomous communities of the Canary Islands and the Balearic Islands.¹³

The amount of the discount is currently 75% of the fare¹⁴ on scheduled air transport services and applies to direct journeys, either one-way or return, between the autonomous communities of the Canary Islands and the Balearic Islands and the rest of the country, as well as inter-island travel.¹⁵

There is a maximum limit on the discount that can be applied to tickets for each flight, which is established by what is referred to as the base fare.¹⁶ The base fare consists of the lowest fully flexible fare,¹⁷ among those offered for the same air service, for one-way or return flights, reported by each airline in accordance with the procedures established by the DGAC, part of the Ministry of Transport, Mobility and Urban Agenda.

The managing body for air transport discounts is the DGAC.¹⁸ The procedure established for granting and settling discounts is as follows: the discount is applied directly to passengers by airlines (or their representatives or agencies) on the air ticket issued. Subsequently, airlines are required to submit a monthly settlement of discounted tickets flown over the following two months, breaking down the price and all items included in the air ticket.¹⁹ For this purpose, airlines must also submit monthly flight records and base fare records, which are used

¹² Article 1 of Royal Decree 1316/2001.

¹³ Additional provision thirteen of Act 17/2012, of 27 December, on the General State Budget for 2013.

¹⁴ Royal Decree 949/2018, of 27 July, changing the amount of the subsidy for residents of non-peninsular territories for scheduled air and sea transport to/from the rest of the country, in accordance with the provisions of additional provision one hundred and forty-seven of Act 2018, of July 3, on the General State Budget for 2018.

¹⁵ Pursuant to Article 2.1 of Royal Decree 1316/2001, a direct journey is considered to be a direct route from the port, airport or heliport of the point of origin in the archipelagos, Ceuta or Melilla, to the destination in the rest of the country and vice versa, without intermediate stopovers or, should there be any, stopovers that do not exceed 12 hours, except those imposed by the technical needs of the service or for reasons of force majeure.

¹⁶ Article 2.5 of Royal Decree 1316/2001.

¹⁷ Fully flexible fares are those that do not have any restrictions (exchanges and refunds are permitted).

¹⁸ Article 4 of Royal Decree 1316/2001.

¹⁹ Additional provision thirteen of Act 17/2012, of 27 December, on the General State Budget for 2013.

for control processes by the managing body. Once the oversight processes have been completed, the corresponding monthly payment is made.²⁰

2.1.2. Development of the partial airfare discount system for residents

Although there was already a subsidy system for air transport in place for residents of the Canary Islands from the 1960s,²¹ it was during the 1980s that the foundations were laid for the current system of discounts for residents of the Spanish archipelagos.²² For the Balearic Islands, the discount percentage was 25% of the fare for flights between the archipelago and the rest of the country, and 10% for inter-island flights. For the Canary Islands, the discount percentage was 33% of the fare for flights between the archipelago and the rest of the country, and 10% for inter-island flights.

In 1996, limits on the total eligible amount for each trip were introduced.²³ These quantitative limits were maintained, with modifications, until 2001.

It was in 1998²⁴ that the amount of the discounts was harmonized for the two archipelagos and for all routes, so that following this, for routes between the Canary Islands and the Balearic Islands and the rest of the country, as well as for all inter-island routes, citizens living on the islands would receive a 33% discount on the fare.

Royal Decree 1316/2001 combined all the regulations adopted previously in a single document. Additionally, it ended the quantitative limits established in 1996, moving to the current system of limits set by the base fare mentioned above.

Since 2005, the amount of the fare discount on scheduled air transport services for residents of the Balearic Islands or the Canary Islands has progressively increased from 33% to 75% today.²⁵

²⁰ Chapter II of Royal Decree 1316/2001.

²¹ Under Decree-Law 22/1962, of 14 June, on subsidies for lines in the Canary Islands, Ifni and Spanish Sahara.

²² Specifically, Act 46/1981, of 29 December, on travel to the peninsula by residents of the Balearic Islands, and Act 33/1987, of 23 December, on the General State Budget for 1988, established partial discounts on the price of air transport for citizens residing in the Balearic Islands and the Canary Islands, respectively.

²³ Act 13/1996, of 30 December, on fiscal, administrative and social measures.

²⁴ Act 30/1998, of 29 July, on the Special Regime for the Balearic Islands; Royal Decree 1745/1998, of 31 July, on subsidies for inter-island air transport for residents of the Canary Islands; and Royal Decree 1746/1998, of 31 July, on subsidies for inter-island air transport for residents of the Balearic Islands.

²⁵ Through Royal Decree 207/2005, of 25 February, amending Royal Decree 1316/2001 and the General State Budget acts of 2006, 2007, 2017 and 2018.

Table 1. Changes in the percentage of the partial airfare discount.

CHANGES IN PARTIAL AIRFARE DISCOUNTS		
Year	Balearic Islands	Canary Islands
1982	10% on inter-island flights 25% on flights to/from the rest of the country	-
1988	-	10% on inter-island flights 33% on flights to/from the rest of the country
1998	33% on inter-island flights and flights to/from the rest of the country	
2005	38% on inter-island flights and flights to/from the rest of the country	
2006	45% on inter-island flights and flights to/from the rest of the country	
2007	50% on inter-island flights and flights to/from the rest of the country	
2017	50% on flights to/from the rest of the country 75% on inter-island flights	
2018	75% on inter-island flights and flights to/from the rest of the country	

Source: compiled by authors based on regulations.

2.2. Other aid for island air transport

In addition to the partial airfare discount for residents, Spain uses other tools to promote island air connectivity, such as establishing public service obligations on certain air routes, discounts on certain airport fees at island airports and aid for establishing new routes to the Canary Islands.

2.2.1. Public service obligations²⁶

Public service obligations in air transport services are regulated at the European level in *Regulation (EC) No 1008/2008 of the European Parliament and of the Council of 24 September 2008 on common rules for the operation of air services in the Community*, and *European Commission Notice 2017/C 194/01, of 17 June — Interpretative Guidelines on Regulation (EC) No. 1008/2008 of the European Parliament and of the Council — Public Service Obligations (PSO)*. In Spain, it is *Act 2/2011, of 4 March, on Sustainable Economy* that regulates certain aspects of transport services in the public interest and public service obligations.

Community legislation ensures that air carriers with a licence issued by a European Union Member State may offer, without restrictions, intra-community air services and freely price said services.²⁷ However, Member States are also allowed to partially restrict these freedoms through the establishment of what are known as public service obligations (PSOs).

PSOs consist of obligations imposed on scheduled air services between an airport in the European Union and another airport serving a peripheral or developing region, or on a low-density route where said route is considered essential for the economic and social development of the region.²⁸ These obligations, which consist of continuity, regularity, capacity and price requirements, shall only be imposed in the case of transport services in the public interest, i.e. those which the operators would not provide if they only took into

²⁶ As mentioned earlier, this study has been prepared taking into account the situation prior to the health crisis caused by COVID-19 and the declaration of the state of emergency on 14th March 2020. Therefore, this section refers to the conditions of public service obligations prior to that date.

As a result of the declaration of the state of emergency, the Ministry of Transport, Mobility and Urban Agenda issued a series of ministerial orders with a considerable impact on air transport:

- Order TMA/247/2020, of 17 March, establishing the transport measures to be applied to connections between the peninsula and the Autonomous Community of the Balearic Islands.
- Order TMA/246/2020, of 17 March, establishing the transport measures to be applied to connections between the peninsula and the Autonomous Community of the Canary Islands.
- Resolution of 20 March 2020, of the Directorate-General of Civil Aviation, establishing the conditions for the provision and direct award of air transport service on the Palma de Mallorca–Menorca and Palma de Mallorca–Ibiza air routes during the state of emergency declared due to COVID-19.
- Order TMA/273/2020, of 23 March, issuing instructions on the reduction of passenger transport services.

²⁷ Articles 15 and 22 of Regulation (EC) No 1008/2008.

²⁸ Article 16 of Regulation (EC) No 1008/2008.

account their own commercial interest and which are necessary to ensure transport service, by any mode of transport, between different locations or to ensure its delivery under reasonably acceptable conditions of frequency, price, quality or universality.²⁹

Therefore, PSOs reflect the economic and social need to facilitate the mobility of citizens living in divided territories, for which air transport is a key mode of transport due to its speed and connectivity.

Declaring a PSO is the responsibility of Member States. In the case of Spain, it is the competence of the Government to establish PSOs for transport services in the public interest under the authority of the State,³⁰ through an agreement of the Council of Ministers, at the proposal of the Ministry of Transport, Mobility and Urban Agenda, and following a report from the Government's Delegate Commission for Economic Affairs.³¹ The Government also sets the requirements imposed pursuant to the PSO.

PSOs are, in principle, set up in a free market regime (open PSOs).³² That is, any air carrier with a licence issued by any Member State may operate in the market, provided that all the requirements of the PSO are met. However, if no Community air carrier has begun or can demonstrate that it is about to begin sustainable scheduled air services on a route in accordance with the PSOs that have been established, access to scheduled air services on that route may be limited to a single Community air carrier (restricted PSOs) for a period of up to four years, or five years, in the case of the outermost regions,³³ after which the situation must be re-examined. The right to operate the services will be put out to public tender,³⁴ so that a public service contract (PSC) is set up with the company awarded the contract.

²⁹ Article 95 of Act 2/2011.

³⁰ As mentioned earlier, article 149 of the Spanish Constitution stipulates that the State has exclusive competence over air traffic and transport.

³¹ Article 95 of Act 2/2011.

³² European Commission Notice (2017/C 194/01): Interpretative guidelines on Regulation (EC) No 1008/2008 of the European Parliament and of the Council — Public Service Obligations (PSO).

³³ According to Regulation (EC) No. 1008/2008, outermost regions are defined in Article 349 of the Treaty on the Functioning of the European Union: they are regions characterized by their great remoteness, insularity, small size, difficult topography and climate, economic dependence on a few products, the permanence and combination of which severely restrain their development. Specifically, the outermost regions are the Canary Islands, the French overseas departments (Guadeloupe, French Guiana, Martinique, Réunion, Mayotte and Saint-Martin), the Azores and Madeira.

³⁴ Article 16 of Regulation (EC) No 1008/2008.

In this case, if compliance with the PSOs results in economic losses for the airline awarded the contract, it may receive financial compensation. Said compensation may not exceed the amount necessary to cover the net costs resulting from the performance of each public service obligation, taking into account the corresponding revenue retained by the operator and reasonable profits.³⁵

Following completion of the liberalisation of air transport in the European Union in 1992, with what is known as the 'third package',³⁶ the Spanish authorities determined that the air transport system was not meeting the mobility needs of residents of the Canary Islands and the Balearic Islands. Since then, a number of PSOs have been established to ensure adequate connectivity for these citizens. This means that two types of aid coexist for routes subject to PSOs: the PSOs themselves and the fare discounts for resident travellers.

In the case of the Canary Islands, the Council of Ministers Agreement of 10 July 1998 established PSOs for 13 inter-island routes. In this declaration, conditions of frequency, timetables, regularity, capacity, continuity, and maximum fares were established for each route. This agreement was replaced by that of 2 June 2006, which amended the PSOs to adapt quality conditions to changing demand, in addition to replacing maximum fares with reference fares, in order to make airlines' pricing policies more flexible, adapting them to demand circumstances and enhancing their productivity, as acknowledged in the explanatory statement of the agreement itself.

The reference fares (in force during the period considered on all Spanish island routes with PSOs) set a limit on the average ticket price, which companies must respect: the average price of all tickets sold must be equal to or less than the reference price, although companies may set a price up to 25% higher than the reference fare for some tickets, provided they comply with the reference fare on average.³⁷ The reference prices are determined annually for each route by the Ministry of Transport, Mobility and Urban Agenda, based on changes in the general consumer price index, although changes in service costs are also taken into account.

³⁵ Article 17 of Regulation (EC) No. 1008/2008.

³⁶ Council Regulations (EEC) No 2407/92, No 2408/92 and No 2409/92, currently replaced by Regulation (EC) No 1008/2008.

³⁷ Subsection III of the Annex to the Council of Ministers Agreement of 2 June 2006, declaring public service obligations on air routes between the Canary Islands. For the PSOs in the Balearic Islands, Subsection III of the Annex to the Council of Ministers Agreement of 21 November 2003, declaring public service obligations on air routes between the Balearic Islands and Subsection IV of the Annex to the Agreement to the Council of Ministers of 27 July 2018, declaring obligations on the Menorca-Madrid air route.

Another of the conditions imposed under the PSOs for inter-island routes concerns the load coefficient or factor (ratio of occupied seats to seat capacity), establishing that, in general terms, it should not exceed 75%.³⁸

Beginning in 2008, the demand for air traffic between the Canary Islands was significantly affected by the international economic crisis, which is why the only company (Binter) that had been offering the service on certain routes (Gran Canaria–Tenerife Sur, Gran Canaria–El Hierro, Gran Canaria–La Gomera and Tenerife Norte–La Gomera) announced its decision to stop doing so. Therefore, and in order to ensure adequate connectivity for Canary Islands residents, the Council of Ministers Agreement of 7 October 2011 limited access to these routes to a single airline, selected through a public tender process. From then until 2018, the company awarded the contract for all these routes was Naysa (now merged with Binter). In 2018, the Gran Canaria–Tenerife Sur and El Hierro–Gran Canaria routes were opened up to competition, while on the Gran Canaria–La Gomera and Tenerife Norte–La Gomera routes,³⁹ there is still a restricted PSO operated by Binter.

In the case of the Balearic Islands, the Council of Ministers Agreement of 21 November 2003 established PSOs on three inter-island routes (Mallorca–Ibiza, Mallorca–Menorca and Menorca–Ibiza), which included requirements in terms of timetables, frequency, minimum capacity, continuity and maximum fares. This agreement was amended by the Ministry of Transport Order of 7 April 2008, which replaced the maximum fare system with one of reference fares, in view of the fact that the previous mechanism did not incentivise the entry of new airlines on these routes or the action of market forces for price competition.

As in the case of the Canary Islands, there were limitations on the load factor, so that in general terms it was not to exceed 75%. Should it do so, companies must carry out price reductions.⁴⁰

³⁸ Subsections II and III of the Annex to the Council of Ministers Agreement of 2 June 2006, declaring public service obligations on air routes between the Canary Islands. It establishes that if the load coefficients recorded in the summer or winter periods on a route, by all operators, continuously exceed 75 per cent and in the absence of seasonal operation of routes, carriers with operational service programmes must take appropriate measures to increase the supply of capacity to lower that level. This limitation will not apply where the price of the promotional and social fares applied to that additional supply is at least fifteen per cent lower than the price of the reference fare.

³⁹ According to the Notice of the conclusion of contracts by the Directorate-General of Civil Aviation for the purpose of 'Air transport services subject to public service obligations on the La Gomera–Gran Canaria and La Gomera–Tenerife Norte routes', published in the Official State Gazette (BOE) of 9 August 2018 (Case: 15/A18).

⁴⁰ Subsections II and III of the Annex to the Council of Ministers Agreement of 21 November 2003 declaring public service obligations on air routes between the Balearic Islands. It establishes that if the load coefficients recorded in the summer or winter periods on a route, by all operators, continuously exceed 75 per cent and in the absence of seasonal operation

Subsequently, the Council of Ministers Agreement of 15 June 2012 declared PSOs for the Menorca–Madrid route during the winter months, as the only airline offering this service (Spanair) ceased operations. As in previous PSOs established, requirements were set for minimum frequency, timetables, capacity, reference fares and load coefficient. However, no airline expressed an interest in operating on that route during the winter months. Therefore, a restricted PSO was established, which in the last tendering process was awarded to the JV made up of Iberia and Air Nostrum.⁴¹

As a result of these changes, in January 2020, there were 17 air routes to or from one of the islands in the Balearic or Canary archipelagos subject to PSOs. The following tables show these routes, the type of PSO (open, if airlines are free to enter the market; or restricted, if the operation is limited to a single airline through a public service contract), as well as the airlines operating on these routes.

Table 2. Routes in the Balearic Islands with PSO and operators, January 2020.

ROUTES WITH PSO IN THE BALEARIC ISLANDS		
Route	Type	Operator(s)
Mallorca–Ibiza	Open PSO	Air Europa
		Air Nostrum
Mallorca–Menorca	Open PSO	Air Europa
		Air Nostrum
Menorca–Ibiza (via Mallorca*)	Open PSO	Air Europa
		Air Nostrum
Menorca–Madrid**	Restricted PSO	Iberia/Air Nostrum JV

* For flights on the Menorca–Ibiza route, when there are no direct flights, public service obligations may be met through connections via Mallorca (Council of Ministers Agreement of 21 November 2003, establishing public service obligations on air routes between the Balearic Islands).

** Only during the period from 1 November to 30 April.

Source: compiled by authors from data from the European Union inventory of public service obligations.

of routes, carriers with operational service programmes must take appropriate measures to increase the supply of capacity to lower that level. This limitation will not apply where the price of the fares applied to that additional supply is at least twenty per cent lower than the price of the base fare reported by the company.

⁴¹ According to the contract award notice issued by the Directorate-General of Civil Aviation published on 17 October 2019 (Case 123A2019).

Table 3. Routes in the Canary Islands with PSO and operators, January 2020^{42,43}.

ROUTES WITH PSO IN THE CANARY ISLANDS		
Route	Type	Operator(s)
Gran Canaria–Tenerife Norte	Open PSO	Canaryfly
		Binter Canarias
Gran Canaria–Lanzarote	Open PSO	Binter Canarias
		Canaryfly
Gran Canaria–Fuerteventura	Open PSO	Binter Canarias
		Canaryfly
Tenerife Norte–Lanzarote	Open PSO	Binter Canarias
		Canaryfly
Gran Canaria–Santa Cruz de la Palma	Open PSO	Binter Canarias
Tenerife Norte–Fuerteventura	Open PSO	Binter Canarias
		Canaryfly
Tenerife Norte–El Hierro	Open PSO	Binter Canarias
		Canaryfly
Tenerife Norte–Santa Cruz de la Palma	Open PSO	Binter Canarias
		Canaryfly
Santa Cruz de la Palma–Lanzarote (via Tenerife Norte)	Open PSO	Binter Canarias
		Canaryfly
Gran Canaria–El Hierro	Open PSO	Binter
		Canaryfly
Gran Canaria–Tenerife Sur	Open PSO	Binter Canarias
Gran Canaria–La Gomera (via Tenerife Norte*)	Restricted PSO	Binter Canarias
Tenerife Norte–La Gomera	Restricted PSO	Binter Canarias

* Where there are no direct flights, public service obligations may be met through connections via Tenerife Norte (Council of Ministers Agreement of 7 October 2011).

Source: compiled by authors with data from the EU public service obligation inventory.

⁴² According to information obtained from the Informa D&B website, the two main shareholders in Binter Canarias (with a joint stake of 60%) are also indirectly Canaryfly's main shareholders.

⁴³ In June 2019, Air Europa, which began operating on several Canary inter-island routes in autumn 2017, announced its departure from the Canary Island market, where it no longer operates.

Finally, the cost to the public coffers of establishing the PSOs totalled €2.68 million in 2019, deriving from payment of compensation to the airline operators for the three routes that are currently restricted.⁴⁴

2.2.2. Discounted airport fees

Another form of support for island air connectivity in Spain is the establishment of different measures to reduce airport fees in island territories.

Airport fees are regulated, firstly, by *Act 21/2003, of July 7, on Aviation Safety*, amended by *Act 1/2011, of March 4, establishing the State Civil Aviation Safety Programme, and amending Act 21/2003, of July 7, on Aviation Safety*, which determines the revenues of Aena, SME S.A., manager of the State's airports of general interest, and establishes the services whose revenue is considered to be public charges.⁴⁵

Secondly, *Act 18/2014, of 15 October, passing urgent measures for growth, competitiveness and efficiency*, establishes that these services shall be referred to as basic airport services,⁴⁶ and determines the regulatory framework to which they are subject. Airport fees are the revenue that Aena, S.A. charges the recipients of basic services (usually airlines⁴⁷) as consideration for them.

Aena, S.A. cannot determine the amount of the airport fees freely, but their amount and changes are established in Spanish legislation: in Act 21/2003 and its successive updates and in Act 18/2014, which governs, among other things, the Airport Regulation Document (DORA). The DORA, approved by the Council of Ministers for five-year periods, defines the minimum conditions necessary for the proper provision of basic airport services by the airport network of Aena, S.A. and establishes a maximum income that limits changes in airport fees.⁴⁸

⁴⁴ According to information obtained from the State procurement platform.

⁴⁵ Article 68.2 of Act 21/2003. These services include: use of runways (landing); airfield air traffic services; meteorological services; passenger and luggage inspection and control services (security); passenger use of terminal areas (passengers); services enabling general passenger mobility and the necessary assistance for persons with reduced mobility (PMR); use of aircraft parking areas; use of jet bridges; use of the airport facility for the transport and supply of fuels and lubricants; and provision of ground handling services.

⁴⁶ Article 30 of Act 18/2014.

⁴⁷ In the case of passenger departure, PRM and security fees, the amount of these benefits may be passed on to passengers by airlines in the corresponding ticket, in accordance with Article 77 of Act 21/2003.

⁴⁸ The DORA sets the maximum annual income per passenger (IMAP) which Aena is allowed to receive for basic services, with the aim of ensuring economic sufficiency in the provision of the service, recouping expected costs in accordance with the principles of efficiency. Annually, Aena calculates the adjusted maximum annual income per passenger, which corrects the IMAP with incentives or penalties for quality achieved and other adjustments

Consequently, the amount of the airport fees is that established in Act 21/2003 and its successive updates, adjusted each year according to the variation in a maximum revenue calculated in accordance with previous regulations.

The general procedure notwithstanding, Article 32.3 of Act 18/2014 stipulates that 'the amount of airport fees may be affected by the discounts established for reasons of general interest, according to objective, transparent and non-discriminatory criteria, in accordance with competition law, and aimed at ensuring territorial structure and cohesion, environmental protection and transport policies aimed, inter alia, at promoting connectivity or internationalisation of passenger and freight transport, with special attention to non-peninsular regions such as the Canary Islands, Balearic Islands, Ceuta and Melilla, where air transport plays a fundamental and irreplaceable role in ensuring the mobility of their citizens.'

On the basis of this, in January 2020, there were discounts in place for reasons of general interest on the airport fees applied in the island territories of the Balearic Islands and the Canary Islands,⁴⁹ which are covered by DORA 2017–2021.⁵⁰

- Discounts for mainland and inter-island traffic for flights at the airports of the Canary Islands and the Balearic Islands:⁵¹ this is a fare discount for passenger departure, general passenger mobility services and assistance to persons with reduced mobility, security⁵² and landing.⁵³ The discount is 70% for inter-island flights and 15% for flights to/from the peninsula.
- Subsidy for off-peak days at Canary Island airports: this consists of a 50% discount on the passenger landing and departure fee, for operations on days of the week with a lower concentration of traffic, excluding inter-island flights, with the aim of boosting traffic in Canary Island airports, making better use of airport facilities.⁵⁴

(such as passenger estimates). This maximum income limits the value of Aena, S.A. airport fees each year, so that they cannot represent expected income exceeding the adjusted maximum annual income.

⁴⁹ These discounts do not entail a cost to Aena, S.A. or, therefore, to the State, since the expected revenue not received as a result of these discounts is recovered by increasing the other undiscounted airport fees at all airports.

⁵⁰ Section 3.9.1 of DORA 2017–2021.

⁵¹ This discount also applies at Ceuta and Melilla airports.

⁵² Article 78 of Act 21/2003, following its amendment by Act 1/2011.

⁵³ Article 75 of Act 21/2003, following its amendment by Act 1/2011.

⁵⁴ Additional provision eighty-three of Act 2/2012, of 29 June, on the General State Budget for 2012.

- Discount for connecting passengers: this is a 40% reduction in passenger departure and security fees, aimed at boosting connecting traffic and thus promoting connectivity.⁵⁵
- Discount for seasonal airports in the Balearic and Canary Islands:⁵⁶ during the low-traffic season, they receive a 20% discount on passenger and security fees.⁵⁷

2.2.3. Start-up aid for airlines operating from the Canary Islands

Since 2013, the Canary Islands has been operating an aid scheme to open up new routes between airports in the Canary Islands and other airports located both within the EU and in third countries. This is known as the Flight Development Program in the Territory of the Outermost Region of the Canary Islands.⁵⁸

The scheme targets new tourism markets outside the EU with the aim of achieving greater geographical diversification of the sector. The main aim is to support the development of the tourism sector in the Canary Islands, the creation of employment and the development of its economy, but also to improve its connectivity, given its remoteness.

The aid consists of a periodic call for proposals by interested airlines for the opening up of new routes, which must meet certain criteria.⁵⁹ Airlines whose proposals are selected receive a direct subsidy, which is intended to pay up to 50% of the cost of the airport fees incurred to operate the new route for up to three years.

The Spanish authorities notified the European Commission of this programme, which falls under EU legislation on state aid, in July 2013. The Commission concluded that the aid meets the compatibility criteria set out in the start-up aid

⁵⁵ Article 80.2 of Act 48/2015, of 29 October, on the General State Budget for 2016, amending section 1 of Article 78 of Act 21/2003, of 7 July, on Aviation Safety. This discount applies to all connecting flights, not just island flights.

⁵⁶ This discount also applies at Ceuta and Melilla airports.

⁵⁷ Article 78 of Act 21/2003, amended by Act 1/2011.

⁵⁸ The aid scheme is based on the Settlement Agreement on the Establishment of a Flight Development Program in the Territory of the Outermost Region of the Canary Islands for 2013–2017, as amended by the Resolution on the Amendment of the Flight Development Program in the Territory of the Outermost Region of the Canary Islands for 2013–2024.

⁵⁹ Routes which have not been operated in the previous 12 months, on which no carrier has planned to operate during the following 12-month period, to destinations which are not likely to result in the transfer of passengers from an existing route to another Canary Islands airport, and which only connect another airport outside the Autonomous Community with the Canary Islands airports.

guidelines.⁶⁰ It therefore declared the aid scheme compatible with the common market,⁶¹ authorising it between July 2013 and December 2017.

The anticipated number of new routes at the time the programme was set up was 50, but that number had not been reached in 2017. Accordingly, the Spanish authorities determined that the Canary Islands airports were still not connected to certain regions, as new tourist markets lacked a regular air connection to the archipelago. Spain therefore notified the Commission of the planned extension of the scheme in August 2017, and the Commission again declared the aid compatible with the common market. The scheme was authorised until December 2021.⁶²

The budget allocated to provide this aid is €10 million for the 2018–2021 period, i.e. €2.5 million per year, although the amount ultimately used will depend on the number of new routes in fact established.⁶³

⁶⁰ European Commission Decision C(2014) 2167: State aid SA. 37121 (2013/N) – Spain. Start-up aid to airlines operating from the Canary Islands.

⁶¹ Pursuant to Article 107.3 c) del TFUE: 'The following may be considered to be compatible with the internal market ... aid to facilitate the development of certain economic activities or of certain economic areas, where such aid does not adversely affect trading conditions to an extent contrary to the common interest.'

⁶² European Commission Decision C(2017) 6546: State aid SA. 48872 – Spain. Prolongation of a start-up aid scheme to airlines operating from the Canary Islands.

⁶³ Information obtained from the Official Journal of the European Union of 5 January 2018.

3. ECONOMIC DESCRIPTION

The air transport sector is essential for the Spanish economy as a whole, since it allows the mobility of persons and goods, and it is crucial for many economic activities, such as tourism,⁶⁴ but it is especially important for the Balearic and Canary archipelagos, where air transport is key to economic and social cohesion.

This is because, for many routes, mainly those connecting the islands with the peninsula or with other international destinations, there are no real transport alternatives.⁶⁵ In addition, this is particularly significant when considering the importance of tourism for the Balearic and Canary islands, where this industry can account for around 44.8%⁶⁶ and 35.2%⁶⁷ of regional GDP, respectively.

The importance of air transport for the Spanish islands can be expressed in a few figures: three island airports (Palma de Mallorca, Gran Canaria and Tenerife Sur) are among the seven largest airports in the country, by passenger volume;⁶⁸ of all commercial air traffic in Spain, which in 2018 totalled 222.6 million passengers (Table 4), 36% had its origin or destination in the Canary Islands or the Balearic Islands;⁶⁹ and of all passengers on domestic flights (origin and destination within Spain), which in 2018 came to 40.2 million, 60% were on connecting flights with the islands.⁷⁰

⁶⁴ Of the 83.7 million foreign tourists who arrived in Spain in 2019, 82% came by plane, according to the Tourist Movement on Borders Survey (FRONTUR) issued by the National Statistics Institute.

⁶⁵ Although there are scheduled sea transport alternatives for many routes, the journey is much longer than air transport, so the degree of substitutability is limited.

⁶⁶ Exceltur (2014).

⁶⁷ Exceltur (2018).

⁶⁸ Aena, S.A.

⁶⁹ DGAC (2019).

⁷⁰ DGAC (2019).

Table 4. Distribution of commercial air traffic in Spain by number of passengers (2018).

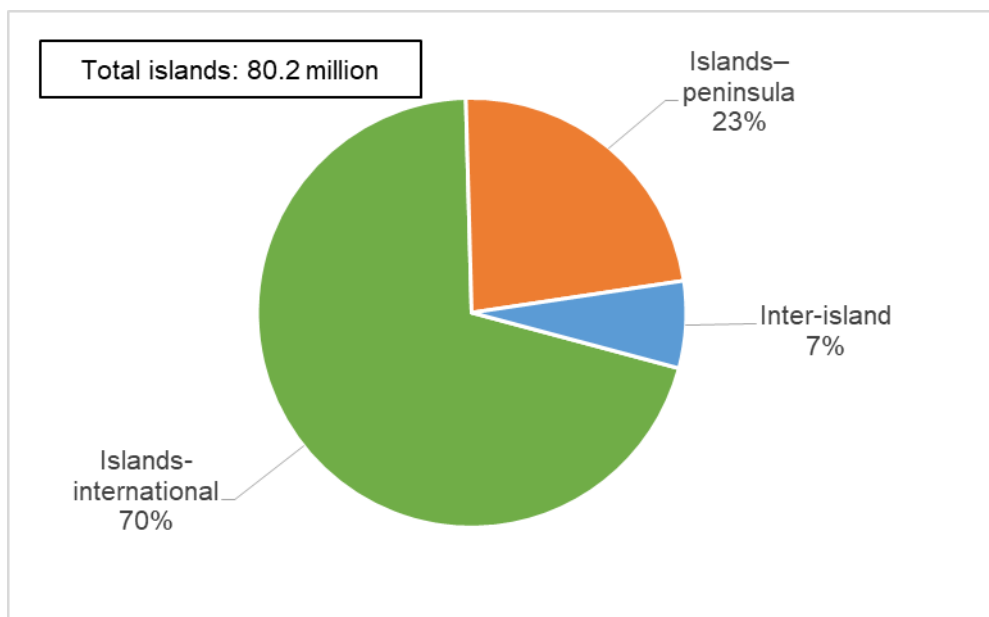
AIR TRAFFIC DISTRIBUTION IN SPAIN		
Traffic type	Million passengers	Share
Total	222.6	100%
International	182.4	82%
Peninsula–International	126.0	69%
Islands–International	56.4	31%
Domestic	40.2	18%
Peninsula	16.1	40%
Peninsula–Islands	18.5	46%
Inter-island	5.3	13%
Other (to/from Ceuta, Melilla and between archipelagos)	0.4	1%

Source: compiled by authors from DGAC data (2019).

Furthermore, if we focus on commercial passenger traffic in the two Spanish archipelagos, according to its geographical distribution, we find that out of a total of 80.2 million passengers on journeys to/from the Canary Islands and Balearic Islands in 2018, 70% were international flights, while 23% travelled between the peninsula and the islands, and 7% between islands within each archipelago.⁷¹

⁷¹ DGAC (2019)

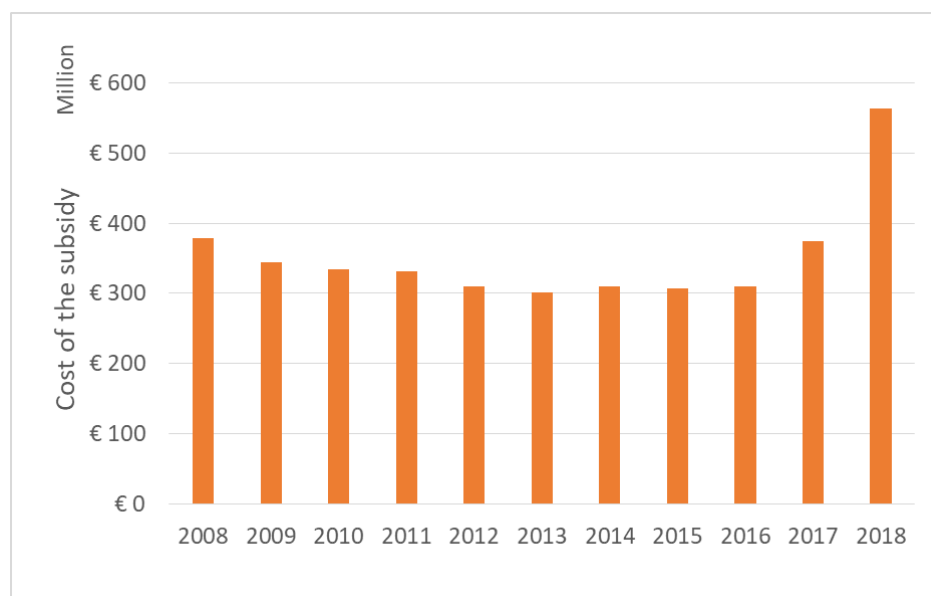
Figure 1. Origin and destination of commercial flights in the Canary and Balearic archipelagos by number of passengers (2018).



Source: compiled by authors from DGAC data (2019).

Of the 80.2 million passengers who made journeys to/from the islands in 2018, 11.1 million of them benefited from the discounts for residents. This aid totalled €563.1 million in 2018, as shown in Figure 2. The trend is sharply upwards as a result of the successive increases in the discount percentage and the increase in the number of residents who have benefited from the aid, as will be seen below.

Figure 2. Variation in the cost of discounts for residents of the Canary Islands and Balearic Islands.



Source: compiled by authors from data provided by the DGAC.

Having seen the importance of the passenger air transport sector for the Spanish islands, the following subsections provide a more detailed analysis of the development of the main market variables in recent years.

Since discounts for residents of the archipelagos are only applicable on scheduled flights to/from the rest of the country and on inter-island travel, the following sections focus on routes between the Canary and Balearic Islands and the peninsula, as well as inter-island routes.⁷²

The analysis is done separately for the islands–peninsula (Balearic Islands–peninsula, Canary Islands–peninsula) and the inter-island routes within each of the archipelagos (inter-island in the Balearic Islands and inter-island in the Canary Islands), which make up groups of routes with similar characteristics.⁷³ To do this, unless otherwise specified, the information used was provided by the DGAC in response to an information request made by the CNMC for the 2008–2019 period, although in this section the majority of the information is presented up to 2018, because data are not available for the final months of 2019. To complete the DGAC's information on airfares, we have also used data requested

⁷² Due to the simplicity of the analysis and their relatively low scale, journeys to/from Ceuta, Melilla and between the two archipelagos have been omitted from the quantitative study.

⁷³ The CNMC has data on the most important individual routes in terms of number of passengers within each group, which have also been analysed. However, given their similar trends in comparison with the aggregates presented here, no economic description has been included for each of these individual routes.

from the four largest airlines, by volume of passengers transported, which fly the densest routes between the archipelagos and the peninsula.⁷⁴

3.1. Routes between the Balearic Islands and the peninsula

2.2.1 The Community of the Balearic Islands is connected to the Iberian Peninsula by air through routes between the islands of Mallorca, Menorca and Ibiza⁷⁵ and more than 20 Spanish cities (24.8 on average in the last decade, although some seasonality is observed⁷⁶). All of them are routes without PSOs, with the exception of the Menorca–Madrid route in winter, which, as mentioned in section 2.2.1, is a restricted PSO, meaning that the airline that is awarded the contract operates the route on an exclusive basis and has to meet the continuity, regularity, capacity, load and price conditions imposed by that PSO, in exchange for financial compensation.

The air routes between the Balearic Islands and the peninsula are of great importance within the domestic air transport industry, as they transported 24% of the total passengers who flew between Spanish airports between 2008 and 2018.

The most significant economic characteristics of this market are discussed in more detail below.

3.1.1. Demand

Air routes between the Balearic Islands and the peninsula carry an average of 8.4 million passengers a year, according to data for the 2008–2018 period.

As we can see in Figure 3, which shows variation in demand for flights on routes between the peninsula and the Balearic Islands, this number remained more or less stable, slightly below 8.5 million, between 2008 and 2011. In the following two years, there were annual declines of 10% in the number of passengers, but 2014 brought the beginning of an intense recovery, with average annual growth of 7% until 2018, when the number of passengers on Balearic–peninsula routes

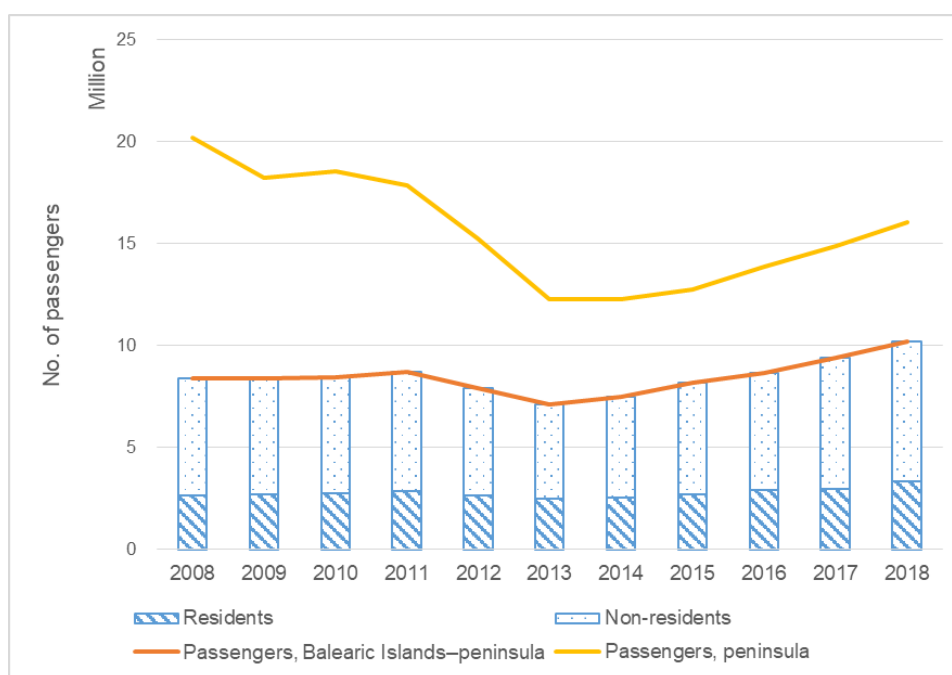
⁷⁴ The airlines from which information was requested are Iberia Express, Air Europa, Ryanair and Vueling, which transport 95% and 86% of passengers on the densest routes (with more than 500,000 passengers a year on commercial flights) connecting the peninsula with the Balearic Islands and the Canary Islands, respectively.

⁷⁵ Among the routes between the Balearic Islands and the peninsula, the most notable are Palma de Mallorca–Barcelona and Palma de Mallorca–Madrid, being the two densest in terms of passengers. Both routes follow a similar trend to the aggregate for the Balearic Islands–peninsula.

⁷⁶ This figure is higher in summer (27) than in winter (23), due to the tourist factor.

topped 10 million. Passengers in the summer season represent more than double those travelling in winter (7 million and 3 million, respectively, in 2018).

Figure 3. Variation in demand on Balearic Islands–peninsula routes and peninsular routes.



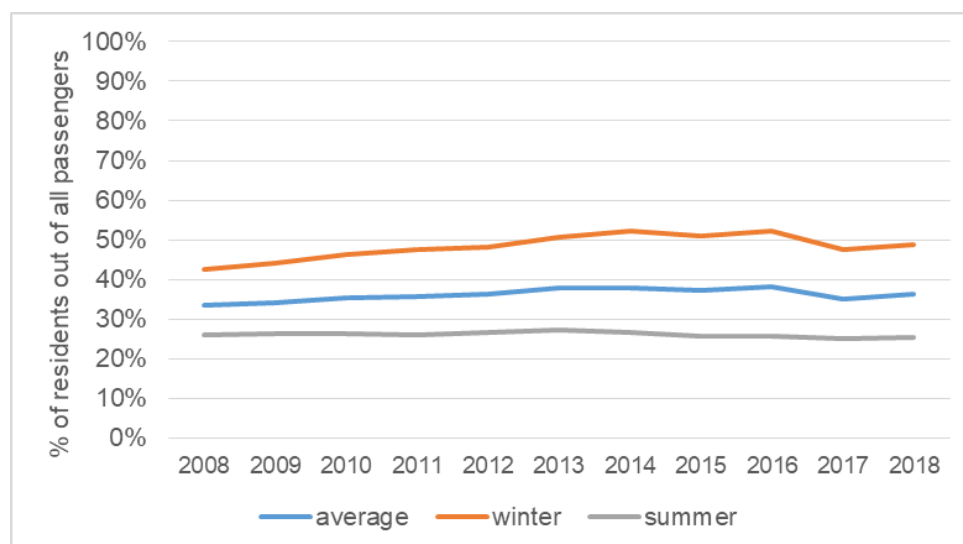
Source: compiled by authors from data provided by the DGAC.

The trend in demand for Balearic Islands–peninsula air routes is similar to that of domestic peninsular flights (origin and destination within the peninsula), although more favourable. Specifically, as Figure 3 shows, on peninsular routes, the decline in demand during the years of the economic crisis was considerably more marked (in 2012 and 2013, there was a 17% average decline in passenger numbers), the recovery came later than for the Balearic Islands–peninsula routes (it is not until 2015 that we see growth in the number of passengers), and it was weaker. Thus, while in the case of the Balearic Island–peninsula routes, the number of passengers in 2018 exceeded the number of passengers in 2008 (approximately 10.2 million in 2018, compared to 8.4 million in 2008), passenger traffic on domestic peninsular flights was still below the pre-crisis level in 2018.

Demand can be broken down into resident passengers and non-resident passengers. Due to the islands' appeal as a tourist destination, the seasonality of flights to/from the Balearic Islands causes this composition to vary in the winter (when residents account for almost 50% of passengers) and summer (when they total just over 25%), due to the increased presence of tourists heading to these island destinations. Thus, calculated annually, residents account for 36% of the

total number of passengers, a share that has remained more or less stable over time (see Figure 4).

Figure 4. Variation in percentage of residents out of total passengers on Balearic Islands–peninsula routes.

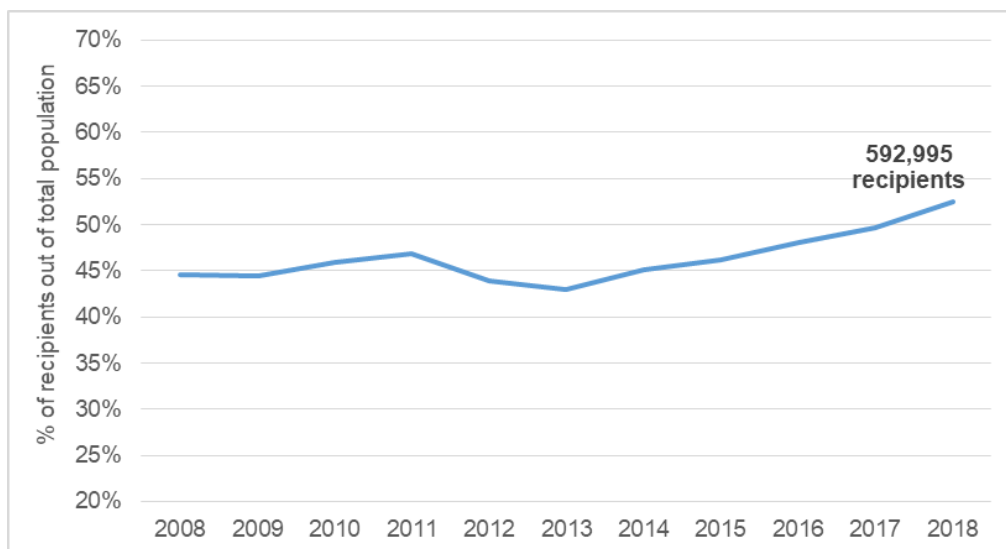


Source: compiled by authors from data provided by the DGAC.

The number of citizen residents of the Balearic Islands who have benefited from the discount when travelling to the peninsula remained stable at around 45% of the archipelago's population until 2013. After that, the percentage of residents benefitting increased to 53% of the population in 2018 (see Figure 5). On average, each recipient used discounted tickets to travel from the archipelago to the peninsula or vice versa 5.4 times a year in the last decade.⁷⁷

⁷⁷ Information on the population of the Balearic Islands has been obtained from the INE (National Statistics Institute).

Figure 5. Variation in percentage of recipients of the discount on island–peninsula flights out of total residents of the Balearic Islands.

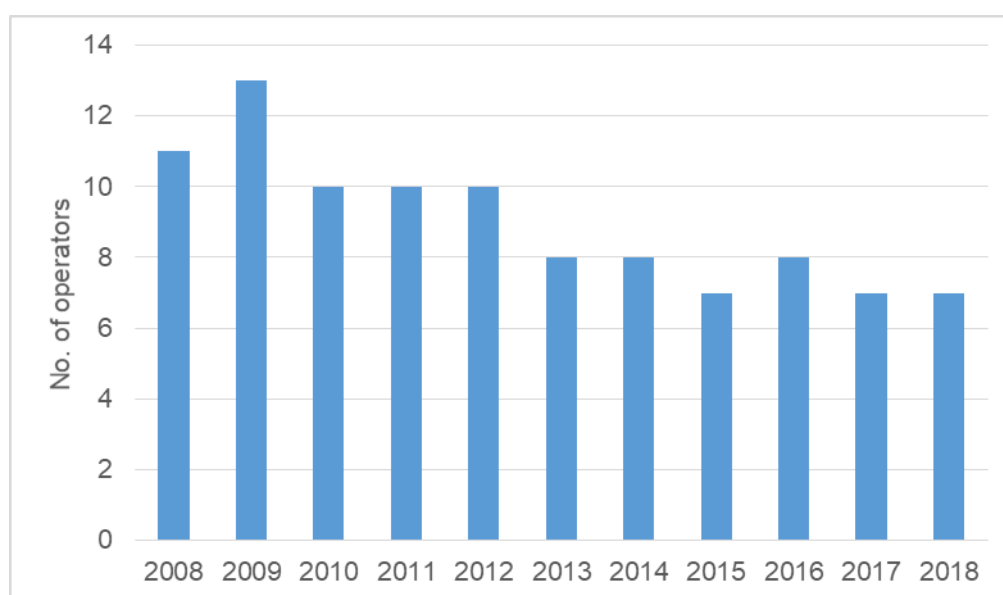


Source: compiled by authors from data provided by the DGAC.

3.1.2. Supply

On average, 9 airlines operated on these routes between 2008 and 2018, but there has been a downward trend in the number of operators over the years, from 11 in 2008 to 7 in 2018, as shown in Figure 6.

Figure 6. Variation in the number of operators on Balearic Islands–peninsula routes.



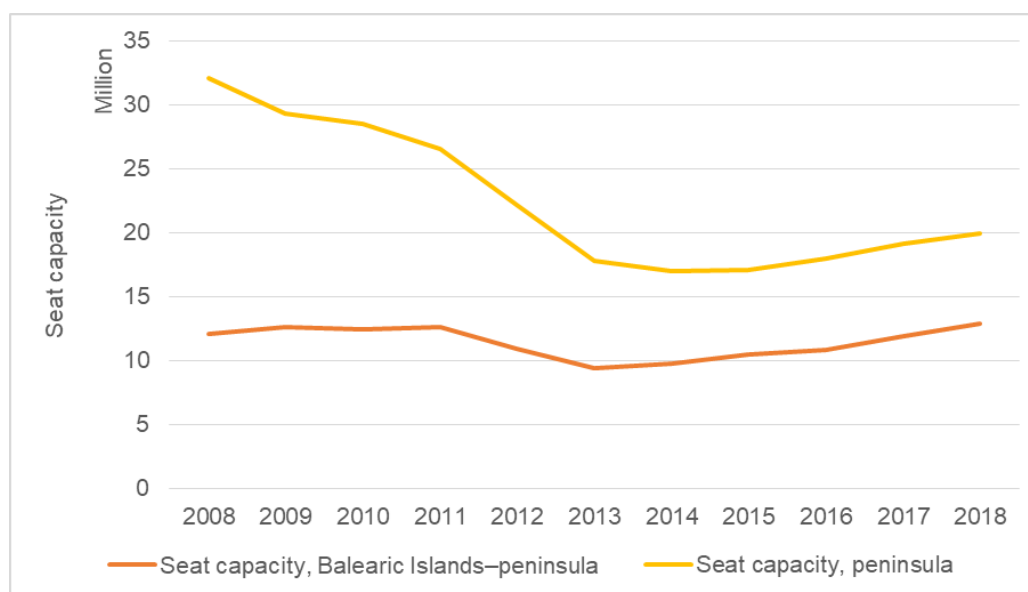
Source: compiled by authors from data provided by the DGAC.

Between 2008 and 2018, all together, the airlines that operate or have operated the routes between the Balearic Islands and the peninsula offered a weekly average of about 1,600 flights (flight numbers double in summer compared to winter) and 11.5 million seats annually.

It should be mentioned that Spanair, an airline operating on different routes between the archipelago and the peninsula, pulled out of the market in January 2012, and in 2013, Air Berlin pulled out of the two main Balearic Islands–peninsula routes (eventually withdrawing from domestic routes to/from the Balearic Islands in the 2015 summer season), limiting the number of operators, especially on less dense routes.

As Figure 7 shows, the number of seats between the Balearic Islands and the peninsula remained stable from 2008 to 2011, when it dropped by 13% a year until 2013 (coinciding with the economic crisis). In 2014, supply began to recover, with average annual growth of 7% until 2018.

Figure 7. Variation in seat capacity on Balearic Islands–peninsula and peninsular routes.



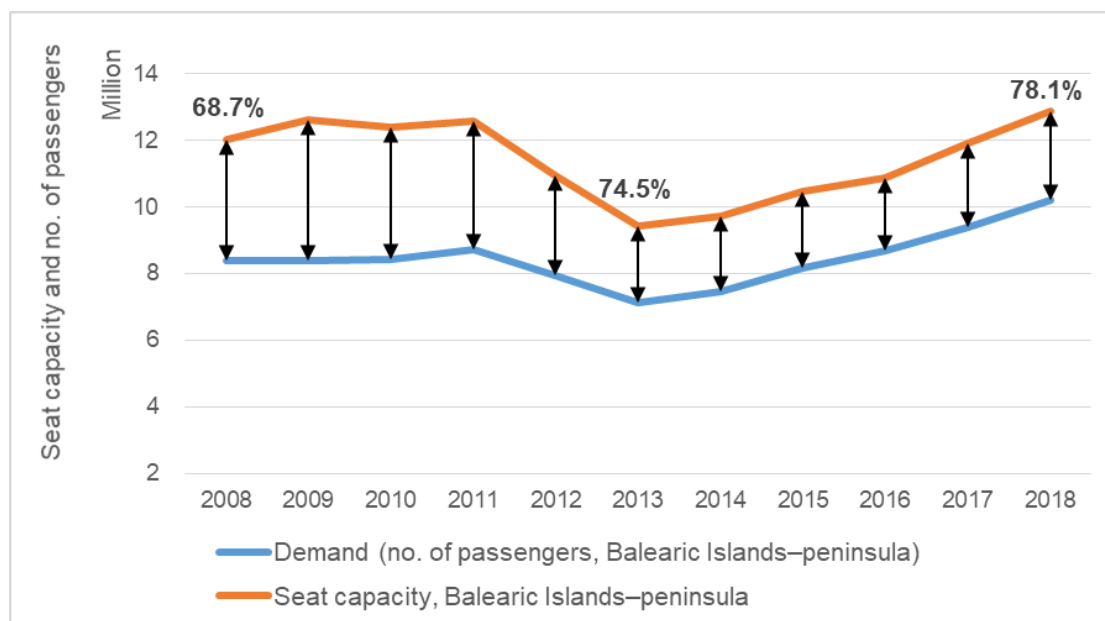
Source: compiled by authors from data provided by the DGAC.

As with demand, variation in air transport supply on routes between the Balearic Islands and the peninsula, despite trending similarly, is more favourable than on domestic non-island flights (origin and destination within the peninsula). On non-island domestic flights, supply fell further with the crisis (around 18% between 2011 and 2013) and recovery was later and slower, starting in 2015 at a cumulative rate of 4% per year (see Figure 7). In addition, while on flights between the Balearic Islands and the peninsula, seat capacity in 2018 exceeded

that in 2008 (approximately 13 million seats in 2018, compared to 12 million in 2008), for domestic peninsular flights, supply has not returned to pre-crisis levels (seat capacity was approximately 20 million seats in 2018, compared to 32 million in 2008).

Furthermore, as shown in Figure 8, supply has evolved almost parallel to variations in demand. And a priori, we see no rigidity in its adjustment over the medium to long term. However, the load factor for flights, which represents the percentage of seats occupied by passengers out of the total, increased almost 10 percentage points over the entire period analysed (2008–2018), from a 68.7% to a 78.1% load (in the domestic peninsular market, the increase in load factor was still higher, 17 percentage points). This increase in the load factor represents an improvement in flight capacity utilisation and explains why the growth in seat supply is lower than that of demand. In the graph, this increase in load appears as a narrowing between the supply and demand lines.

Figure 8. Fit between supply and demand on Balearic Islands–peninsula routes, and variation in the load factor.



Source: compiled by authors from data provided by the DGAC.

3.1.3. Prices

The prices paid by passengers can be broken down into the fare, which is the discountable part of the prices, and non-discountable fees.⁷⁸

This section discusses the variation in average fares for airline tickets purchased, i.e. actual average fares sold. The time period shown for the fares represents the date on which the flight was taken (not the purchase date of the ticket). For island–peninsula routes, the data presented represent fare data applied to resident passengers (obtained by the DGAC in managing the settlement of discounts), as the CNMC does not have fare data for non-resident passengers for the 2008–2018 period.⁷⁹ For inter-island routes, we give total average data, as in these cases, information is available on fares paid by resident and non-resident passengers (obtained by the DGAC as part of PSO compliance control).

It should be noted here that the average fares for tickets purchased by residents and non-residents do not necessarily coincide. If the two groups do not follow the same pattern of purchasing air tickets, that is, if they behave differently in terms of, for example, how early they purchase tickets, flight times, what airline they travel with, type of ticket chosen, or willingness to pay, the average fares for their tickets will differ, without this implying that the fares offered by airlines necessarily differ between the two groups.

The average fares⁸⁰ for tickets purchased by residents for flights between the Balearic Islands and the peninsula (shown in Figure 9) followed a generally downward trend between 2008 and 2018, reaching 22% below the 2008 level in 2018. The overall decline was interrupted in the years 2012 and 2013, when there was an increase of 3% and 9% respectively, coinciding with the marked drop in demand and especially in supply, to which contributed the departure of Spanair and Air Berlin from the market. From 2014 to 2017, fares resumed their downward trend, decreasing by 6.4% annually on average, although in 2018 there was an increase of 11% over 2017.

⁷⁸ Specifically, fares refer to the price that passengers pay for their carriage and their luggage, including, but not limited to, applicable taxes, fees and charges, except the infrastructure usage fee and security fee (Article 2.4 of RD 1316/2001).

⁷⁹ The CNMC has information – provided by the four most important airlines (in terms of passenger volume) – about average fares paid by residents and non-residents for a limited period of time (2016–2019), so it cannot be used for the economic description. It is, however, used in section 5.

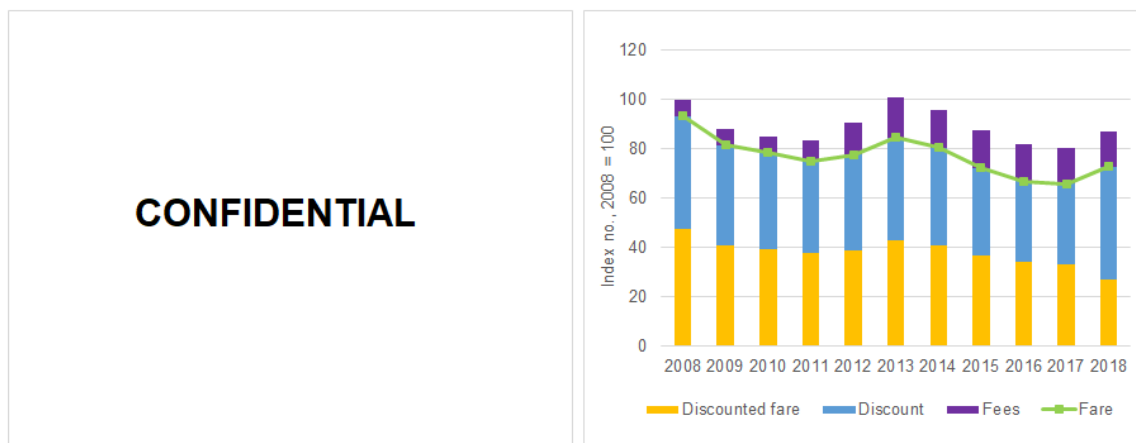
Additionally, it also has fare data provided by IATA, but they were not considered representative, since these data do not take into account online sales, which account for a large percentage of tickets sold, especially for some companies.

⁸⁰ As specified above, the fare is a portion of the price, before the discount is applied.

Figure 9. Variation in average fares and fees for tickets purchased by residents on Balearic Islands–peninsula routes.

Panel 9.1 Fares and fees (euros)

Panel 9.2 Fare (index numbers)



Source: compiled by authors from data provided by the DGAC.

Note: the green line represents the airfare, which is the discountable part of the tickets (the amount to which the discount percentage for residents is applied). Passengers entitled to a discount effectively pay only part of the airfare, that corresponding to the discounted fare (yellow bar), as the discount (blue bar) is deducted for them. Therefore, the final price paid by residents consists of the discounted fare plus the non-discountable fees (sum of the yellow and purple bars).

The discounted percentage of the resident fare remained at 50% until mid-2018, when the discount percentage was increased to 75%, meaning that, in aggregate, during 2018 the discount for residents represented 63% of the fare.

As regards the airport fees charged to passengers, which are not discountable (infrastructure and security fees), they increased significantly between 2011 and 2013 (growing by 154% over three years).⁸¹

This trend in fares and fees resulted in the price of tickets purchased by residents before deducting the discount falling by 14% starting in 2008, while after the discount, it dropped by 23%.

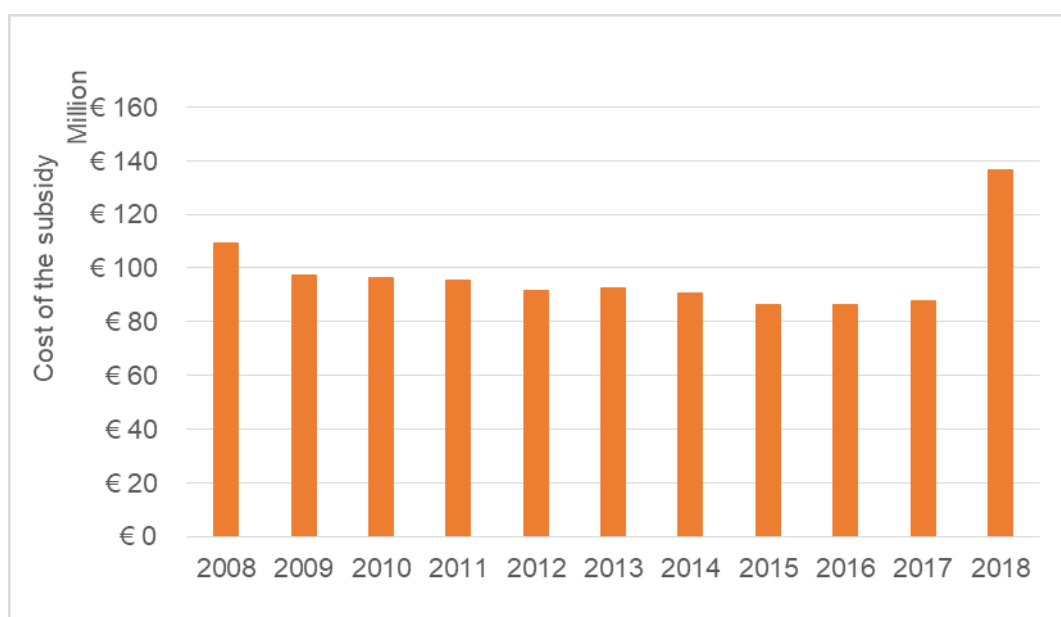
⁸¹ The amounts of the non-discountable average fees applicable to resident passengers have been estimated by the DGAC using the following criteria: the latest version of Aena's fee catalogue of each year was used; taxes are excluded; in the islands–peninsula markets, the proportions of resident traffic to/from Madrid, Barcelona, the next category of peninsular airports and the largest airports in the Canary Islands have been taken into account; without taking into account discounts for seasonality or for connecting flights; and on the inter-island markets in the Canary Islands and the Balearic Islands, only the amount corresponding to the highest category airports has been considered.

3.1.4. Cost of the discount

Finally, the discount for island residents entails a cost to the public coffers, since the amount of these subsidies is borne by the State. On average, between 2008 and 2018, aid for Balearic Islands–peninsula routes amounted to 97.3 million euros per year.

Between 2008 and 2017, the cost fell from €109 million to €88 million euros for Balearic Islands–peninsula routes, mainly due to the effect of fare reductions (price effect), although the decline in demand in the middle of the period (quantity effect) also contributed. However, in 2018, when the discount increased to 75%, the cost to the public coffers rose by 55% year-on-year, reaching €136 million (an average cost of €230 per recipient in 2018).

Figure 10. Variation in the cost of the subsidy for Balearic Islands–peninsula routes.



Source: compiled by authors from data provided by the DGAC.

3.2. Inter-island routes in the Balearic Islands

In the Balearic Islands, there are three inter-island commercial routes linking the islands of Mallorca, Menorca and Ibiza.⁸² These routes are subject to open PSOs, so that multiple operators compete, all meeting the requirements imposed by these PSOs.

⁸² Within these routes, the most important in passenger volume are Palma de Mallorca–Ibiza and Palma de Mallorca–Menorca, both with very similar behaviour to that of the aggregate of Balearic Islands inter-island routes.

In the case of connecting air routes between the Balearic Islands, their quantitative significance in terms of the domestic air transport industry is significantly lower than in the case of the Balearic Islands–peninsula routes, as they transported 2% of the total number of passengers who flew between Spanish airports from 2008 to 2018.

The most significant economic characteristics of this market are discussed in more detail below.

3.2.1. Demand

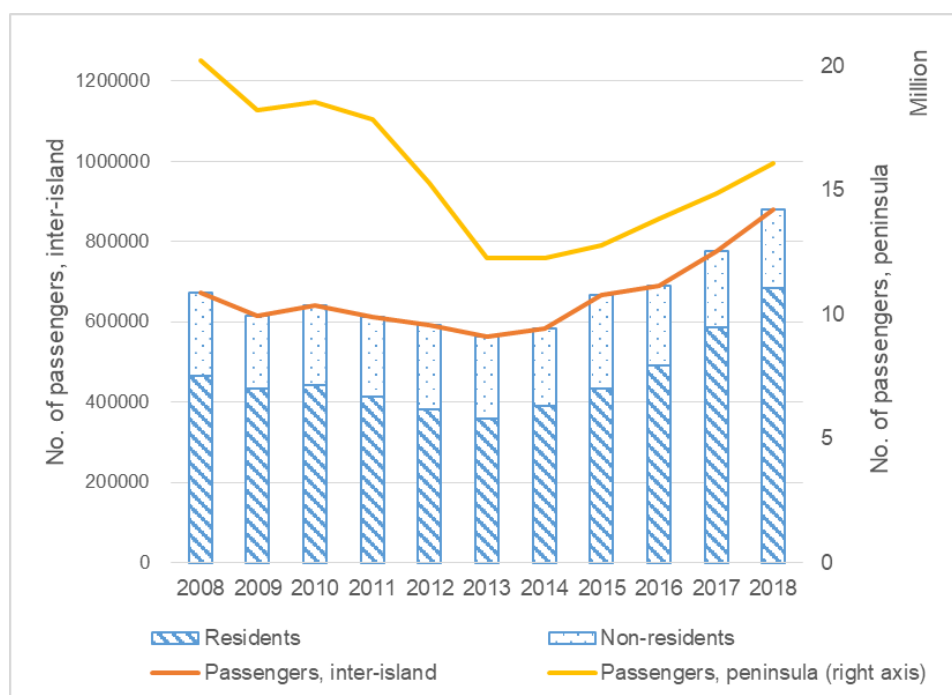
On average, according to data for 2008–2018, the Balearic Islands inter-island routes carry 663,000 passengers annually.

Figure 11 shows the variation in demand on Balearic Islands inter-island routes for the 2008–2018 period, and how this compares with the variation in demand on peninsular flights (origin and destination within peninsular Spain). As the graph shows, demand for inter-island flights in the Balearic archipelago remained stable or decreased slightly between 2008 and 2014, although the declines were much smaller (5% in the worst year) than on Balearic Islands–peninsula routes.⁸³ From 2014 onwards, growth is solid (9% on average per year until 2018), topping 880,000 passengers in the last year (compared to just under 672,000 passengers in 2008).

On these routes, there is also a seasonal component, but it is less marked than on flights to/from the continent: in this case, demand in summer is 1.75 times greater than in winter (562,000 passengers travelling in summer versus 319,000 in winter in 2018).

⁸³ See section 3.1.1.

Figure 11. Variation in demand on Balearic inter-island and peninsular routes.



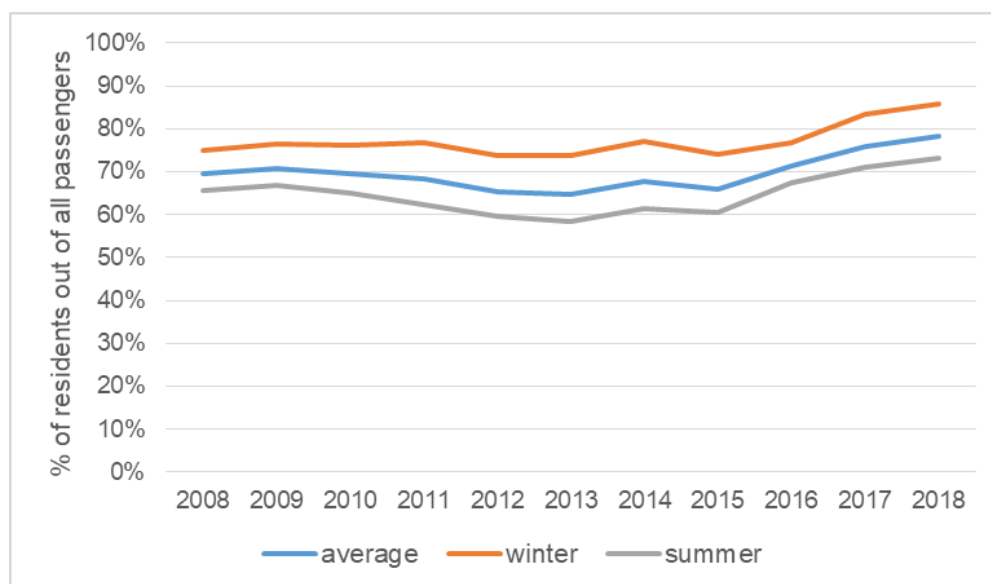
Source: compiled by authors from data provided by the DGAC.

Note: due to the different scale of demand for flights on inter-island routes compared to peninsular routes, their variation has been represented on different axes (inter-island demand, represented by the orange line, on the left axis; peninsular demand, represented by the yellow line, on the right axis).

The variation in demand on inter-island air routes in the Balearic archipelago is, again, similar to that of non-island domestic flights, although more favourable, with the decline in demand on peninsular routes being more severe during the years of the economic crisis, and the recovery later and weaker. Consequently, while on Balearic Islands inter-island routes, 2018 demand is 31% higher than in 2008, pre-crisis demand levels have still not been reached on the peninsular routes.

The resident share of total demand is very high, averaging around 70% over the last decade, although it reached 78% in 2018. On inter-island routes, the resident share is more similar in summer and winter than on Balearic Islands–peninsula routes (65% on average in summer vs. 77% in winter, see Figure 12).

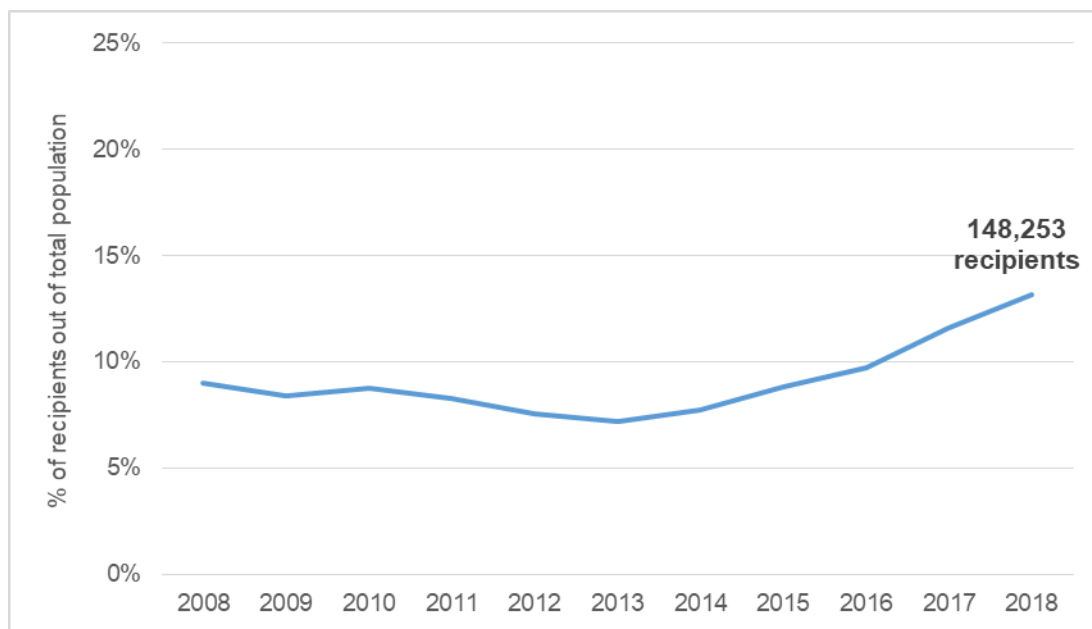
Figure 12. Variation in percentage of residents out of total passengers on inter-island routes in the Balearic Islands.



Source: compiled by authors from data provided by the DGAC.

Resident citizens who benefited from the discount on inter-island flights account for about 9% of the population, on average, in 2008–2018, although in recent years this number has risen to 13% (more than 148,000 people, see Figure 13). On average, each recipient in the Balearic Islands used the discount on inter-island flights 4.6 times a year during the 2008–2018 period.

Figure 13. Variation in percentage of recipients of the discount on inter-island flights out of the total number of residents in the Balearic Islands.

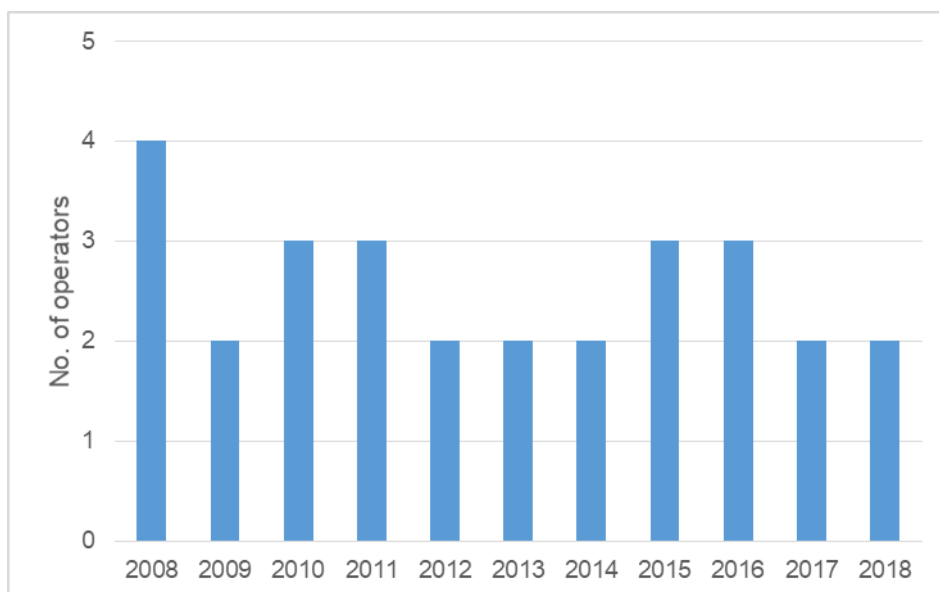


Source: compiled by authors from data provided by the DGAC.

3.2.2. Supply

On inter-island air routes in the Balearic Islands, the number of operators decreased from four to two in 2009, and from then until 2018, it remained stable at between two and three. Since 2017, two companies remain, given Air Berlin's withdrawal from these routes (Figure 14).

Figure 14. Variation in number of operators on inter-island routes in the Balearic Islands.

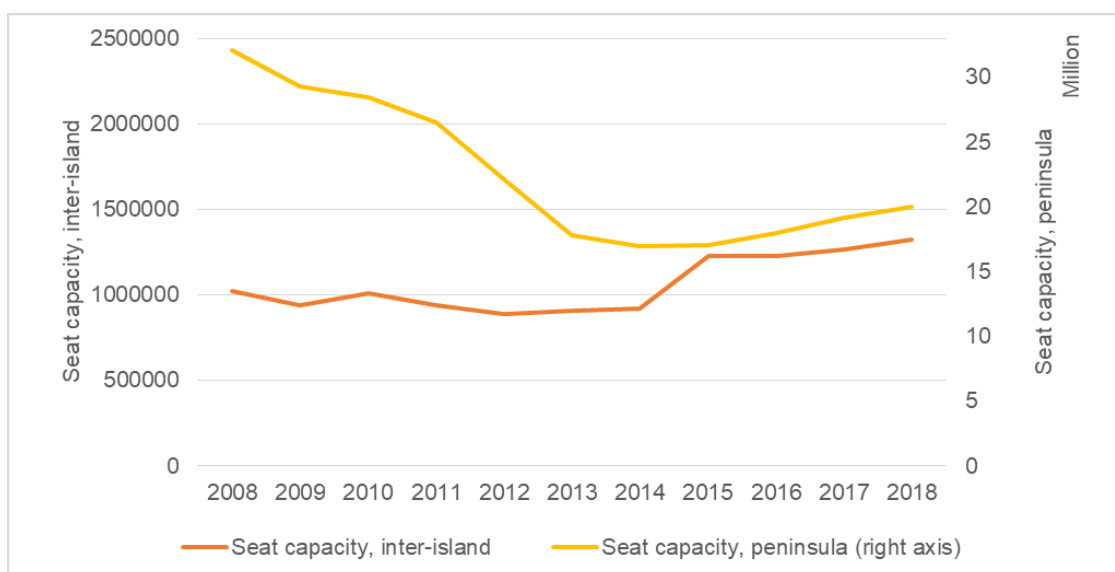


Source: compiled by authors from data provided by the DGAC.

From 2008 to 2018, airlines operating or that have operated Balearic Islands inter-island routes offered an average of 300 weekly flights (70% more during the summer than in winter), and just over 1 million seats a year.

With regard to variation in supply over the past few years, as shown in Figure 15, the annual supply of seats on inter-island routes declined slightly between 2008 and 2012, from over 1 million in 2008 to approximately 880,000 in 2012. From then until 2018, growth was steady, especially in 2015 (when Air Europa entered the market), which saw 33% growth. In 2018, seat capacity was over 1.3 million seats, 29% more than in 2008.

Figure 15. Variation in seat capacity on Balearic inter-island and peninsular routes.



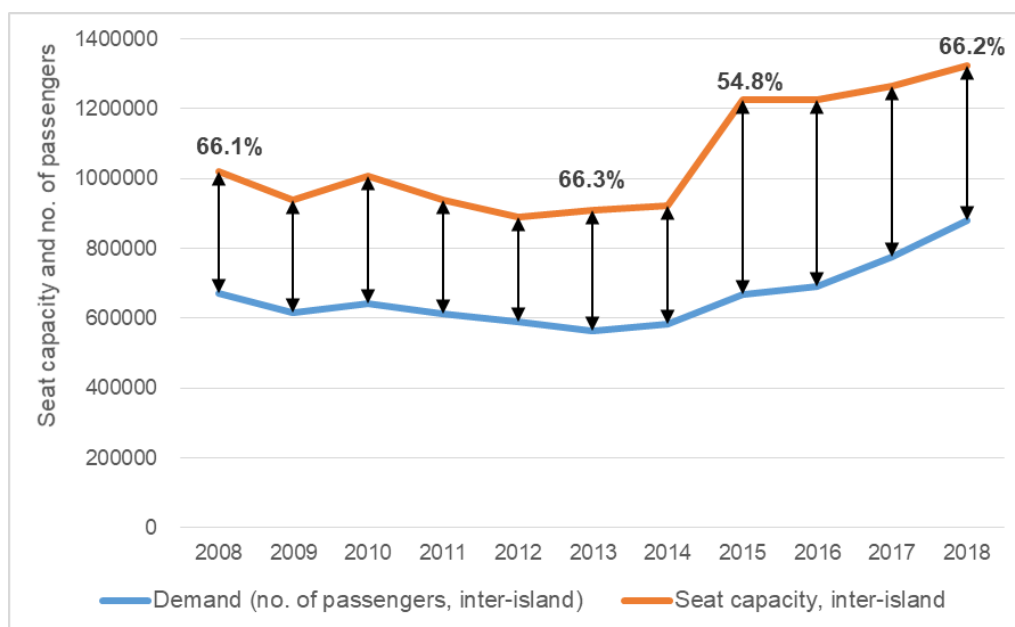
Source: compiled by authors from data provided by the DGAC.

Note: due to the different scale of supply for flights on inter-island routes compared to peninsular routes, their variation has been represented on different axes (inter-island supply, represented by the orange line, on the left axis; peninsular supply, represented by the yellow line, on the right axis).

Like demand, the variation in air transport supply on routes between the Balearic Islands shows a similar trend, but it is more favourable than for domestic non-island flights (Figure 15). In domestic peninsular flights, supply dropped further with the crisis, and the recovery was later and weaker. Consequently, unlike inter-island routes, supply for domestic peninsular flights is still well below the pre-crisis level.

In the case of inter-island flights, there is generally no narrowing between demand and supply (Figure 16). The load factor in 2018 is almost identical to that in 2008 (66%), although between 2013 and 2016, it fell from 66% to 55% due to the sharp increase in seat supply, coinciding with the entry of a new operator, Air Europa, into the market.

Figure 16. Fit between supply and demand on inter-island routes in the Balearic Islands, and variation in the load factor.



Source: compiled by authors from data provided by the DGAC.

3.2.3. Prices

On inter-island routes, unlike Balearic Islands–peninsula routes, there are available data on the average fare for tickets purchased, both by resident passengers for the 2008–2018 period (obtained by the DGAC in settling discounts) and for those purchased by all passengers (obtained by the DGAC within the framework of PSO compliance).⁸⁴

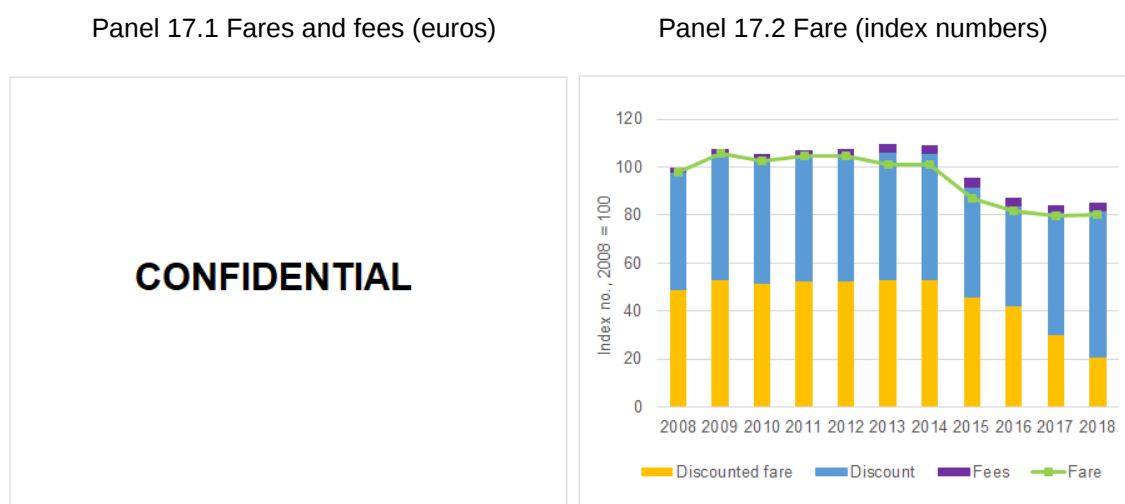
It should be remembered that the average fares for tickets purchased by residents and non-residents do not necessarily coincide. If the two groups do not follow the same pattern of purchasing air tickets, that is, if they behave differently in terms of, for example, how early they purchase tickets, flight times, what airline they travel with, type of ticket chosen, or willingness to pay, the average fares for their tickets will differ, without this meaning that the fares offered by airlines necessarily differ between the two groups.

Average airfares for airline tickets purchased for inter-island flights in the Balearic Islands (Figure 17) remained stable or increased slightly between 2008 and 2014. After that, there was a sharp drop, especially in 2015 and 2016 (14% and 6% YoY, respectively), coinciding with the entry of an additional operator into the

⁸⁴ Therefore, data on non-discountable fares and fees (green line and purple bar in the graph) are those relating to total passengers, while the data for discounted fare and discount relate to resident passengers.

market, and a 33% increase in seat supply in 2015 compared to the previous year. Over the next two years, fares remained stable.

Figure 17. Variation in average fares and fees for all passengers on inter-island routes in the Balearic Islands.



Source: compiled by authors from data provided by the DGAC.

Note: the green line represents the airfare, which is the discountable part of the tickets (the amount to which the discount percentage for residents is applied). Passengers entitled to a discount effectively pay only part of the airfare, that corresponding to the discounted fare (yellow bar), as the discount (blue bar) is deducted for them. Therefore, the final price paid by residents consists of the discounted fare plus the non-discountable fees (sum of the yellow and purple bars). The final price for non-resident passengers (not entitled to a discount) is calculated as the sum of the full fare plus the airport fees (sum of the green line and purple bar).⁸⁵

The discounted percentage of the resident fare remained at 50% until mid-2017, when the discount percentage was increased to 75%, meaning that, in aggregate, during 2017 the discount for residents represented 63% of the fare, while in 2018 it represented 75%.

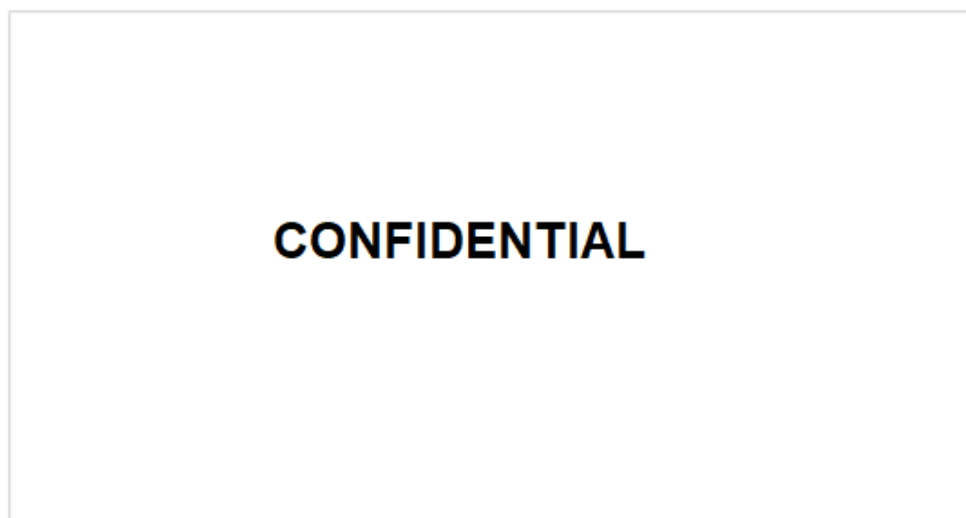
In the case of inter-island routes, airport fees are much lower than on routes to/from the peninsula,⁸⁶ between 2% and 4% of the fare. As a result, in 2018, the

⁸⁵ In some years (such as 2013, 2014 and 2015) the airfare (green line) is slightly different from the sum of the discounted fare (yellow bar) and the discount (blue bar). This is because, during these years, the average airfare for tickets purchased by residents was slightly higher than the average airfare for tickets purchased by all passengers, without distinguishing between residents and non-residents. This does not necessarily imply discrimination between passengers on the part of airlines, but, as already mentioned, may be due to other factors, such as different buying habits of residents and non-residents.

⁸⁶2.2.2 Airport fees for passenger departure, general passenger mobility services and assistance to persons with reduced mobility and security are discounted by 70% for inter-island flights

average final price for non-residents⁸⁷ was 22% lower than in 2008 (similar to flights to/from the peninsula), and for residents, once the discount is applied, it was 53% lower (see Figure 18).

Figure 18. Variation in average final prices paid by residents (once the discount has been applied) and non-residents on inter-island routes in the Balearic Islands.



Source: compiled by authors from data provided by the DGAC.

Note: data on prices for non-residents have been calculated from data on prices paid by residents, prices paid by total passengers, and ratio of residents to the total.

As explained in section 2.2.1, as part of the PSOs to which they are subject, the Balearic Islands inter-island routes between Palma de Mallorca–Menorca, Palma de Mallorca–Ibiza and Menorca–Ibiza have a reference fare, determined annually by the Ministry of Transport, Mobility and Urban Agenda for each route. This sets a maximum limit on the average fare of all tickets sold.

On average, between 2008 and 2018, average fares on Balearic Islands inter-island routes were 16% lower than the reference fare. Between 2008 and 2013, the reference fare increased by just under 2% per year, remaining stable from then until 2018 (Figure 19). Average fares, meanwhile, remained more or less stable until 2014, so that the margin between them and reference fares widened

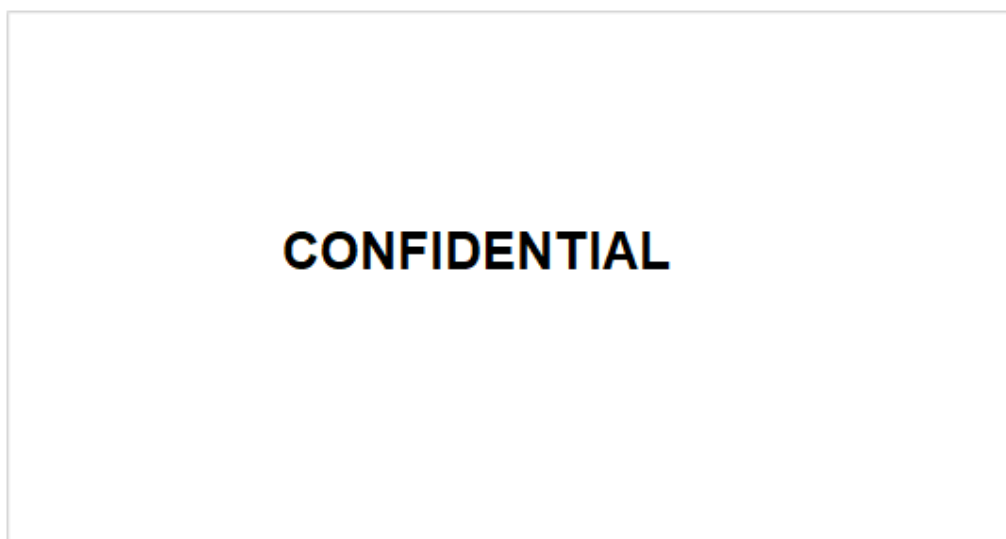
at airports in the Balearic Islands, as well as in the Canary Islands, as explained in section 2.2.2.

⁸⁷ For inter-island routes, it is possible to calculate the price paid by non-resident passengers, as information is available on both average fares paid by all passengers (obtained by the DGAC to verify compliance with the PSOs), average fares of tickets purchased by resident passengers (obtained by the DGAC for the settlement of discounts for residents), and the percentage of the two types of passengers.

slightly. Beginning in 2015, a decline in average fares and stability in the reference fare caused the margin between the two to grow to 31% in 2018.

However, there are differences in the fit with the reference fare between some routes and others, as we see smaller margins on denser routes. Thus, by volume of passengers transported annually, on the Palma de Mallorca–Ibiza route, between 2008 and 2018, the average fare was [...] ⁸⁸ lower than the reference fare, on Palma de Mallorca–Menorca it was [...] lower, and on Menorca–Ibiza, [...] lower.

Figure 19. Variation in the reference fare and average actual fare on inter-island routes in the Balearic Islands.



Source: compiled by authors from data provided by the DGAC.

3.2.4. Cost of the discount

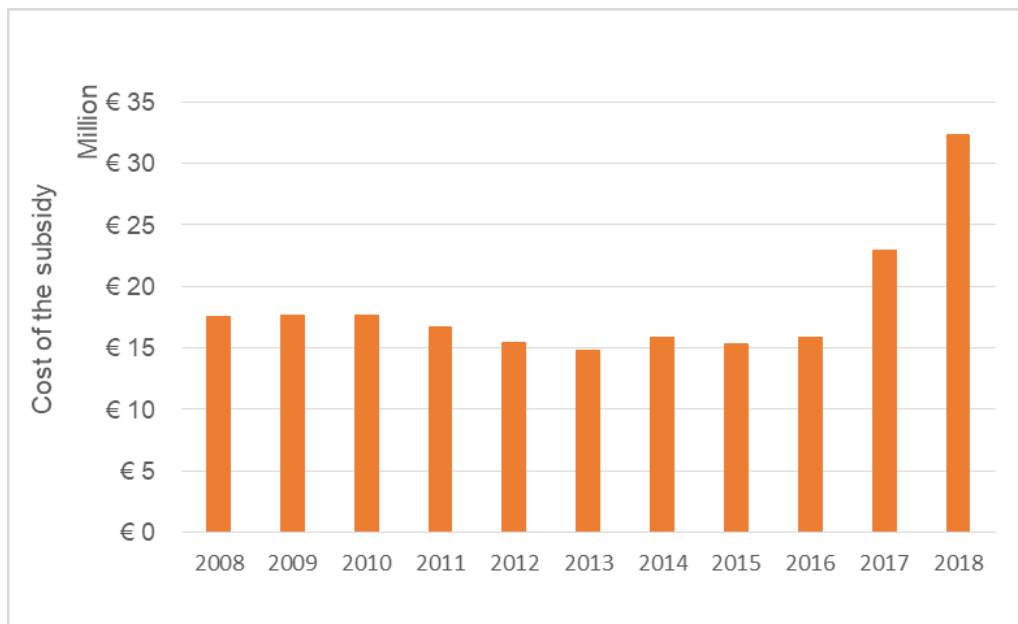
On average, between 2008 and 2018, aid for inter-island journeys in the Balearic Islands totalled €18.4 million per year.

In terms of its variation, the cost to the public coffers of the discount for residents on Balearic Islands inter-island routes was generally lower between 2008 and 2013, going from €17.5 million to €14.8 million due to the fall in demand (quantity effect). After that, it grew slightly and stabilised, until in 2017 and 2018, when with the increase in the discount percentage and the recovery in demand, the cost to

⁸⁸ Information whose precise content has been deemed confidential is indicated in square brackets.

the State doubled, reaching €32 million, growing by 45% and 41% annually, respectively (Figure 20).

Figure 20. Variation in the cost of the subsidy for inter-island routes in the Balearic Islands.



Source: compiled by authors from data provided by the DGAC.

3.3. Routes between the Canary Islands and the peninsula

In recent years (2008–2018), the Canary Islands have been connected to the peninsula via routes⁸⁹ to/from an average of 19 peninsular cities, although some seasonality can be observed.⁹⁰ All of them are routes without PSOs.

Air routes between the Canary Islands and the peninsula are of great importance within the domestic air transport industry sector, as they transported 20% of the total number of passengers who flew between Spanish airports from 2008 to 2018.

The behaviour of the main market variables (demand, supply and prices) has varied considerably in recent years, as will be discussed below.

⁸⁹ Among the routes between the Canary Islands and the peninsula, the most notable are Gran Canaria–Madrid and Tenerife Norte–Madrid, being the two densest in terms of passengers. Both routes follow a similar trend to the aggregate for Canary Islands–peninsula.

⁹⁰ In winter the average is 18 and in summer 21, due to the tourist factor.

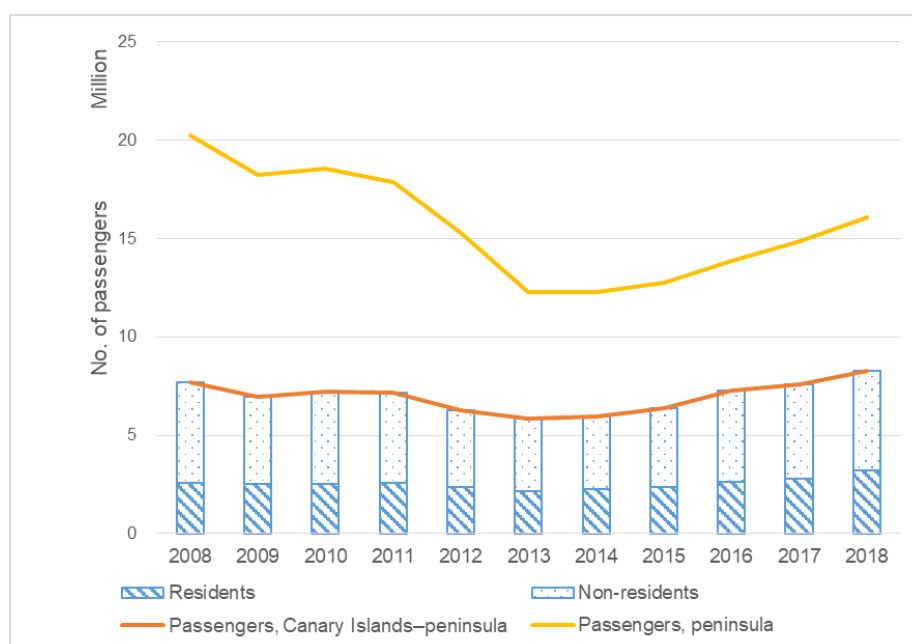
3.3.1. Demand

According to data for the 2008–2018 period, air routes between the Canary Islands and the peninsula carried an average of 6.9 million passengers annually.

As we can see in Figure 21, which shows the variation in demand on flights between the peninsula and the Canary Islands, this trended downward until 2014. In 2014, demand began to recover, with average annual growth of 7.2% until 2018, when the number of passengers on Canary Islands–peninsula routes topped 8 million, and demand levels returned to pre-economic crisis levels (in fact, the number of passengers in 2018 was 8% higher than in 2008).

Additionally, the number of passengers in the summer season is higher than during the winter (in 2018, more than 5 million in summer versus 3 in winter), although the difference is not as noticeable as in the case of the connecting routes between the peninsula and the Balearic Islands, due to the lower seasonality of tourism in this archipelago.

Figure 21. Variation in demand on Canary Islands–peninsula and peninsular routes.

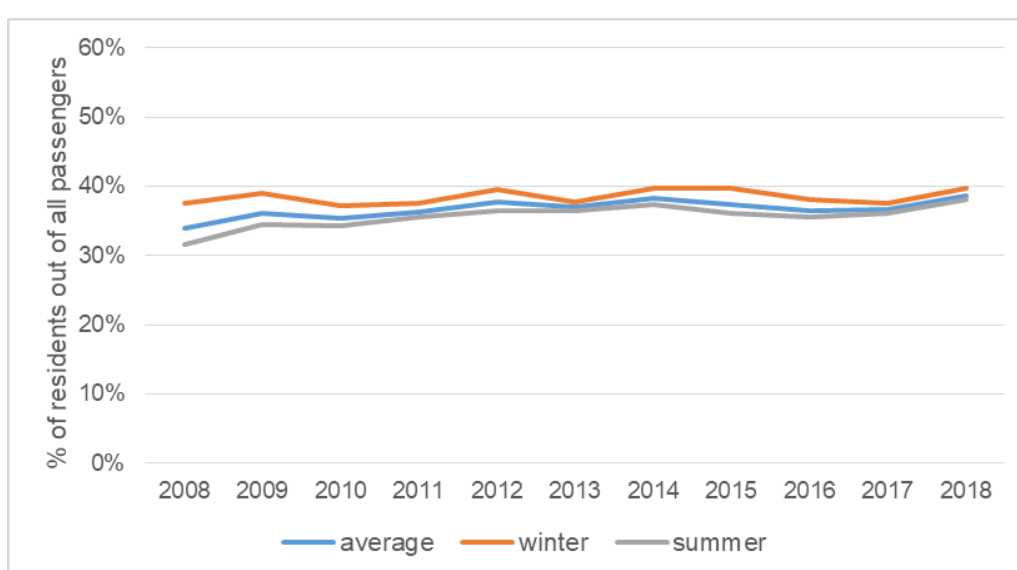


Source: compiled by authors from data provided by the DGAC.

The variation in demand on air routes between the Canary archipelago and the peninsula is similar to that of domestic peninsular flights, although more favourable. Specifically, as shown in Figure 21, on routes between the Canary Islands and the peninsula, the drop in demand during the years of the economic crisis was less severe than on peninsular flights, and the recovery came earlier (demand has not yet recovered on peninsular routes).

As for the distinction between resident and non-resident passengers, demand from resident passengers accounts for approximately 37% of the total (average data between 2008 and 2018), although it is slightly higher in the winter months than in the summer (39% versus 36%, respectively). As shown in Figure 22, as with overall demand, seasonality in the Canary Islands is not as marked as in the Balearic Islands.

Figure 22. Variation in percentage of residents out of total passengers on Canary Islands–peninsula routes.



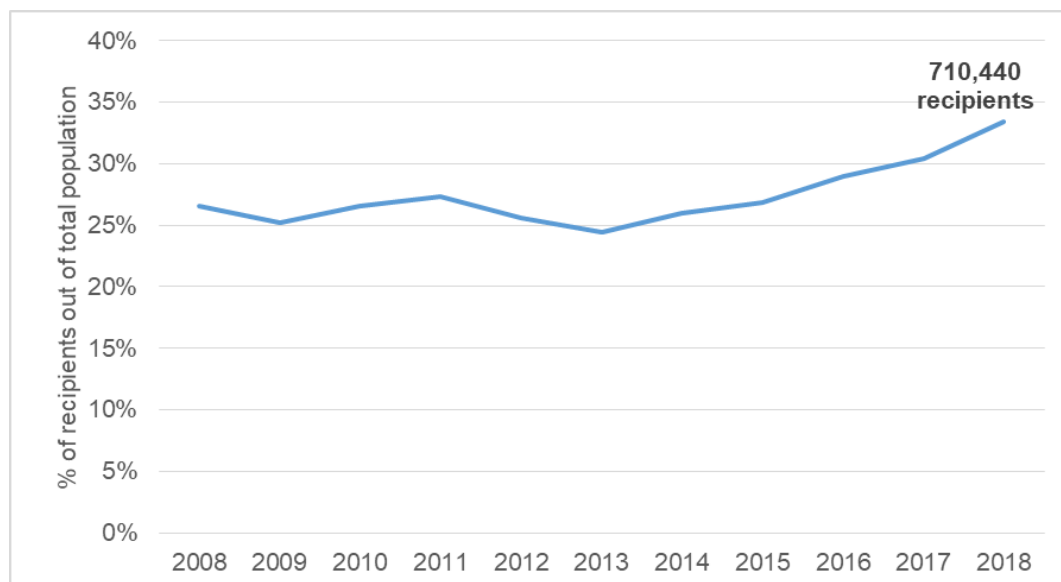
Source: compiled by authors from data provided by the DGAC.

The proportion of citizens residing in the Canary Islands who benefit from the discount when travelling to the peninsula is 27% of the total population)⁹¹ (on average, in the 2008–2018 period), and we can see that this percentage progressively increased from 2013, when it was 24.5%, to 2018, when the percentage of residents benefiting from the discount was 33.4% (see Figure 23).

On average, each recipient has used discounted tickets to travel from the archipelago to the peninsula or vice versa 4.4 times a year in the last decade.

⁹¹ Information on the population of the Canary Islands has been obtained from the INE (National Statistics Institute).

Figure 23. Variation in percentage of recipients of the discount on island–peninsula flights out of the total residents of the Canary Islands.



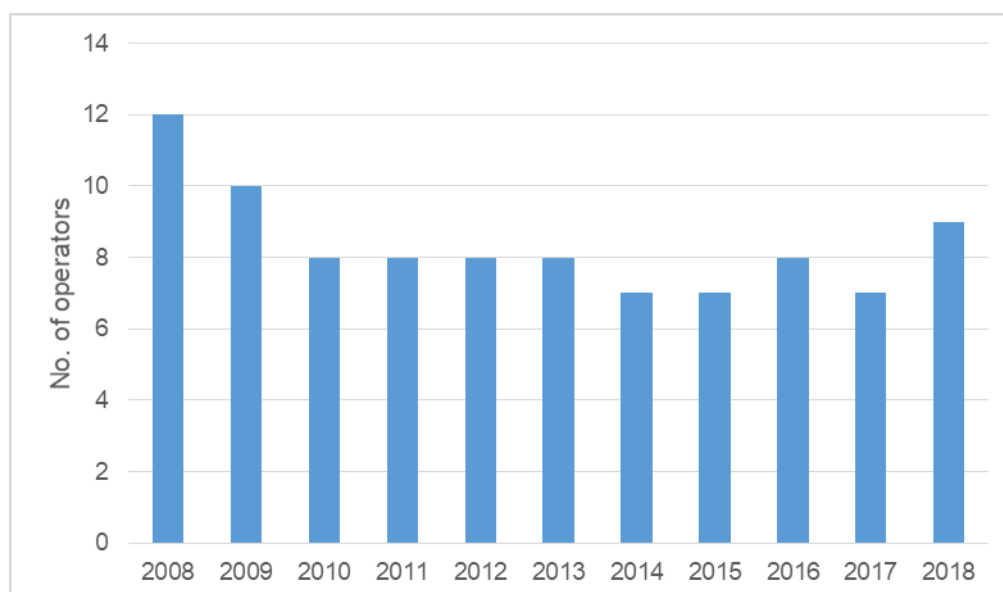
Source: compiled by authors from data provided by the DGAC.

3.3.2. Supply

In terms of supply, an average of 8 airlines provided air transport services between the Canary Islands and the peninsula in the 2008–2018 period, with approximately 8.5 million seats made available to passengers annually, and more than 1,000 weekly flights.

Between 2008 and 2014, the number of operators dropped from 12 to 7, although since then it has increased again, to 9 (Figure 24).

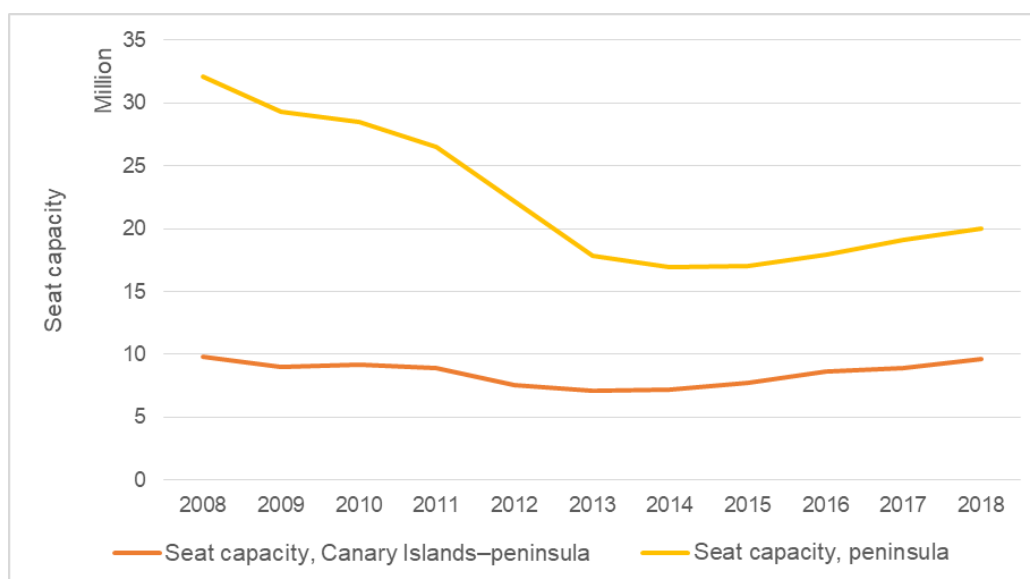
Figure 24. Variation in number of operators on Canary Islands–peninsula routes.



Source: compiled by authors from data provided by the DGAC.

As regards the trend in recent years (see Figure 25), we can see that supply on Canary Islands–peninsula routes, measured in terms of seat capacity, fell until 2014 (coinciding with the economic crisis), when we began to see a recovery in supply. By 2018, supply had almost returned to 2008 levels, with seat capacity of 9.6 million seats, 2% less than in 2008

Figure 25. Variation in seat capacity on Canary Islands–peninsula and peninsular routes.

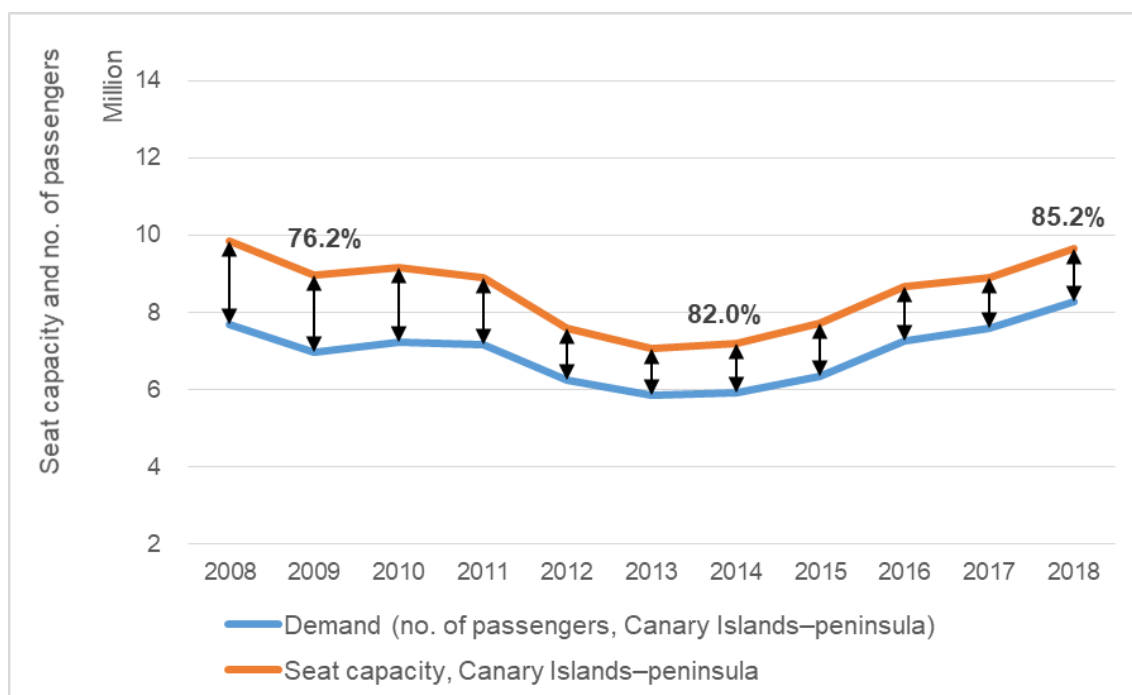


Source: compiled by authors from data provided by the DGAC.

This trend is similar to that of the rest of the domestic air transport market, although on routes between the Canary Islands and the peninsula, it is more favourable: the 2011 decline was less severe than on peninsular routes, and recovery was earlier and more robust.

Another trend that can be observed in the variation in supply is the increase in the load factor since 2009 (from about 76% to about 85%) (Figure 26). This increase in the load factor reflects greater utilisation of aircraft capacity, and it appears on the graph as a narrowing between the supply and demand curves.

Figure 26. Fit between supply and demand on Canary Islands–peninsula routes, and variation in the load factor.



Source: compiled by authors from data provided by the DGAC.

3.3.3. Prices

As in the case of Balearic Islands–peninsula routes, the variation in average fare of air tickets purchased by resident passengers for flights between the Canary Islands and the peninsula (obtained by the DGAC in managing the settlement of

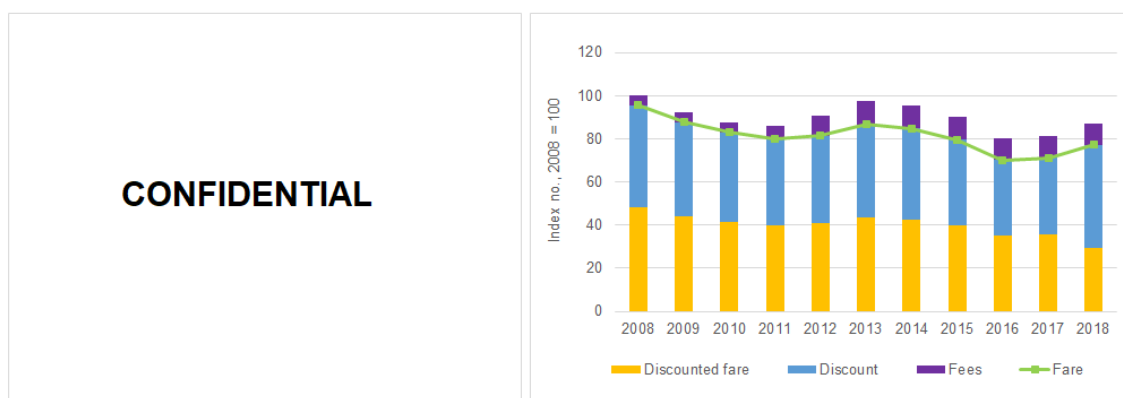
discounts) is shown below, as the CNMC has no fare data for non-resident passengers for 2008–2018.⁹²

Average fares (Figure 27) follow a downward trend between 2008 and 2018, sitting at 19% below the 2008 level in 2018. However, during the years 2012 and 2013 there was year-on-year growth of 2% and 6%, respectively. This increase coincides with the aforementioned drop in demand and, in particular, in supply, to which the departure from the market of Spanair, which operated Canary Islands–peninsula flights, contributed. From 2014 to 2016, fares continued the overall downward trend of the period, increasing again in 2017 and 2018 (2% and 8%, respectively).

Figure 27. Variation in average fares and fees for tickets purchased by residents on Canary Islands–peninsula routes.

Panel 27.1 Fares and fees (euros)

Panel 27.2 Fare (index numbers)



Source: compiled by authors from data provided by the DGAC.

Note: the green line represents the airfare, which is the discountable part of the tickets (the amount to which the discount percentage for residents is applied). Passengers entitled to a discount effectively pay only part of the airfare, that corresponding to the discounted fare (yellow bar), as the discount (blue bar) is deducted for them. Therefore, the final price paid by residents consists of the discounted fare plus the non-discountable fees (sum of the yellow and purple bars).

The discounted percentage of the resident fare remained at 50% until mid-2018, when the discount percentage was increased to 75%, meaning that, in aggregate, during 2018 the discount for residents represented 63% of the fare.

⁹² See section 3.1.3.

As for the airport fees charged to passengers, which are not discountable (passenger and security fees), they increased significantly between 2010 and 2013 (growing by 155% in those years).

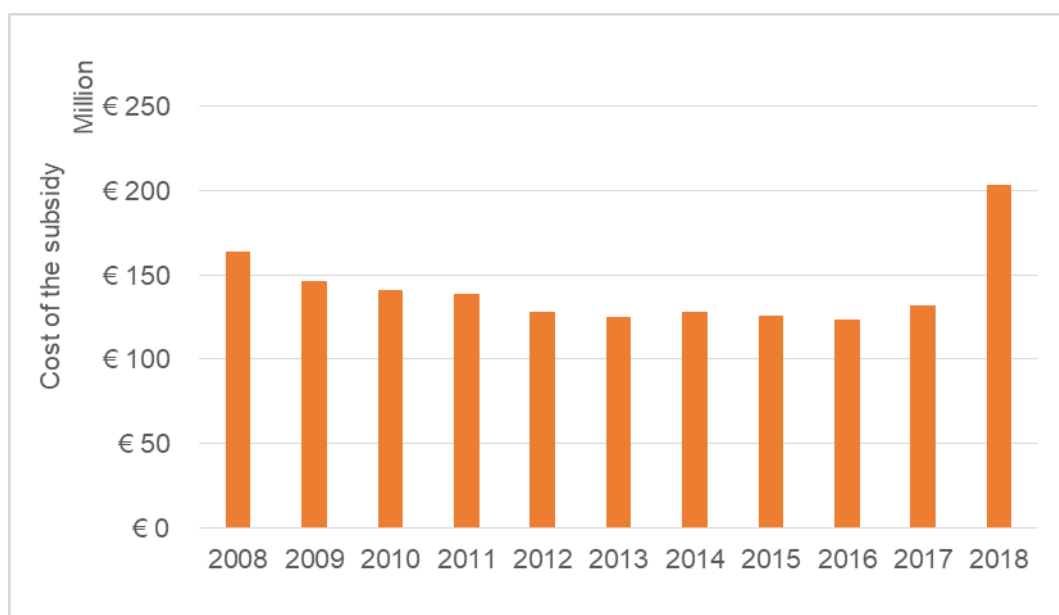
As a result of this trend in average fares, fees and discount percentage, average actual prices for residents before the discount is deducted have dropped by 13% since 2008, while after the discount is applied, average actual prices dropped by 25%, with the combined effect of the trend in average fares, airport fees and the increase in the discount percentage.

3.3.4. Cost of the discount

As for the cost to the public coffers of the discount for residents on the routes connecting the Canary Islands with the peninsula, between 2008 and 2018 it was, on average, €141.13 million euros per year.

Between 2008 and 2013, the cost gradually fell from €163 million to €124.1 million, mainly due to the fall in demand (quantity effect), as well as the drop in prices between 2008 and 2011. After that, it remained more or less stable until 2017, when it experienced 7% growth, and it soared in 2018, when the cost grew by 54%, reaching just under €203.3 million, as a combined result of the increase in demand and the discount percentage.

Figure 28. Variation in the cost of the subsidy for Canary Islands–peninsula routes.



Source: compiled by authors from data provided by the DGAC.

3.4. Inter-island routes in the Canary Islands

The islands that make up the Canary Islands have 13 inter-island air transport routes subject to PSOs.⁹³ As described in section 2.2.1., on 11 of these routes, the PSOs established are open, while on the remaining 2 (Gran Canaria–La Gomera and Tenerife Norte–La Gomera), there is a restricted PSO operated by Binter.

Connecting air routes between the Canary Islands transported 9% of the total passengers who flew between Spanish airports from 2008 to 2018.

The most significant economic characteristics of this market are discussed in more detail below.

3.4.1. Demand

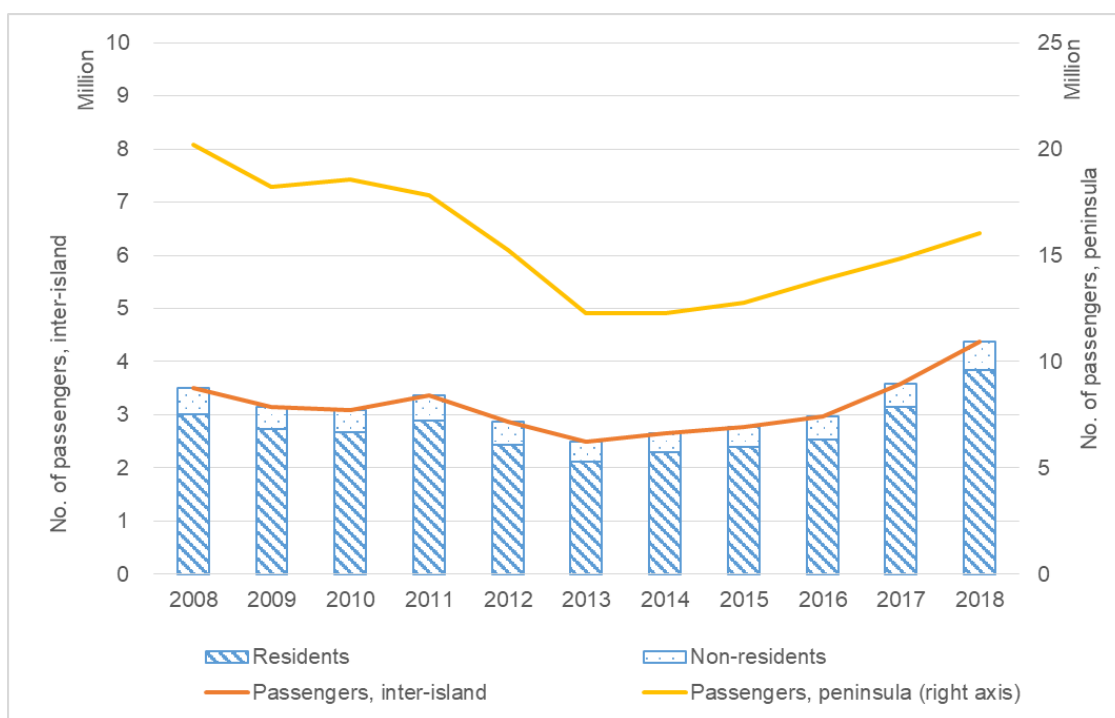
On average, according to data for the 2008–2018 period, Canary Islands inter-island routes carry 3.2 million passengers annually.

Figure 29 shows the variation in demand on these routes in the 2008–2018 period, and how it compares with variation in demand on peninsular flights (to and from within peninsular Spain). As the graph shows, between 2008 and 2013, demand for flights on these routes fell significantly, 29% in terms of number of passengers. In 2014, demand began to recover, accelerating in 2017 and 2018, when the number of passengers on these routes increased by 21% and 22%, respectively. As a result, the number of passengers transported in 2018 was just under 4.4 million, up 24% over 2008 levels.

Demand on inter-island routes in the Canary archipelago shows the least seasonality of all those considered in this study, with the ratio between passengers transported in the summer and winter seasons being 1.57, on average, during the last 10 years. In 2018, for example, more than 2.7 million passengers travelled in summer, compared to approximately 1.64 million in winter.

⁹³ Among the routes that connect the Canary Islands to each other, the most important are Gran Canaria–Tenerife Norte and Gran Canaria–Lanzarote, both with very similar behaviour to that of the inter-island routes in the aggregate.

Figure 29. Variation in demand on Canary inter-island and peninsular routes.



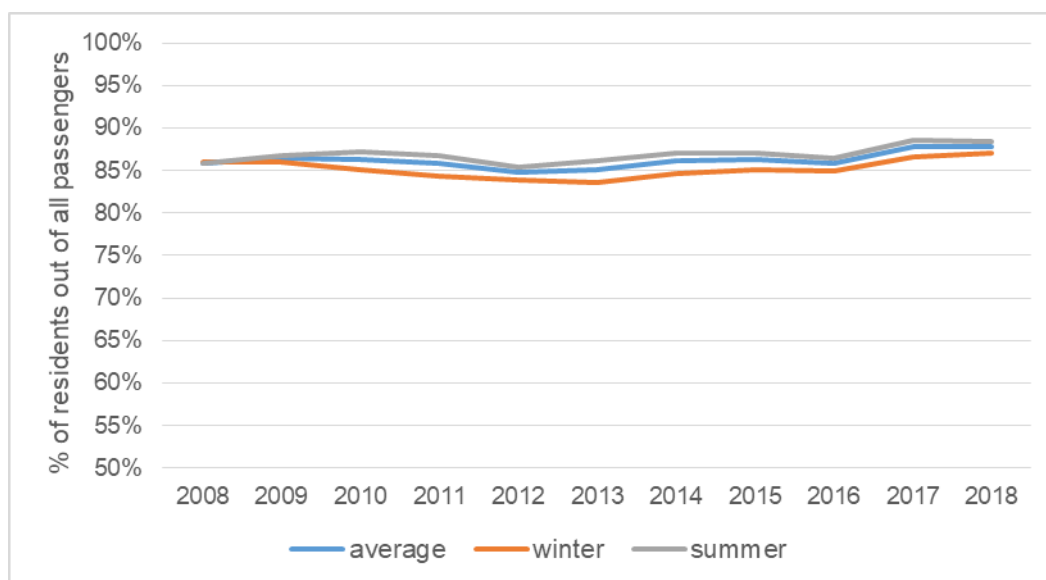
Source: compiled by authors from data provided by the DGAC.

Note: due to the different scale of demand for flights on inter-island routes compared to peninsular routes, their variation has been represented on different axes (inter-island demand, represented by the orange line, on the left axis; peninsular demand, represented by the yellow line, on the right axis).

As with all other island routes, demand for Canary Islands inter-island air routes has been similar in recent years to that of domestic peninsular flights, although weaker during the years of the crisis, and stronger during the economic recovery (unlike Canary Islands inter-island routes, peninsular flights have not yet recovered pre-economic crisis demand levels; see Figure 29).

Additionally, demand can be broken down into resident passengers and non-resident passengers. Demand from resident passengers accounts for approximately 86% of the total (see Figure 30; average data between 2008 and 2018), with no significant difference between winter and summer months (85% versus 87%, respectively).

Figure 30. Variation in percentage of residents out of total passengers on inter-island routes in the Canary Islands.



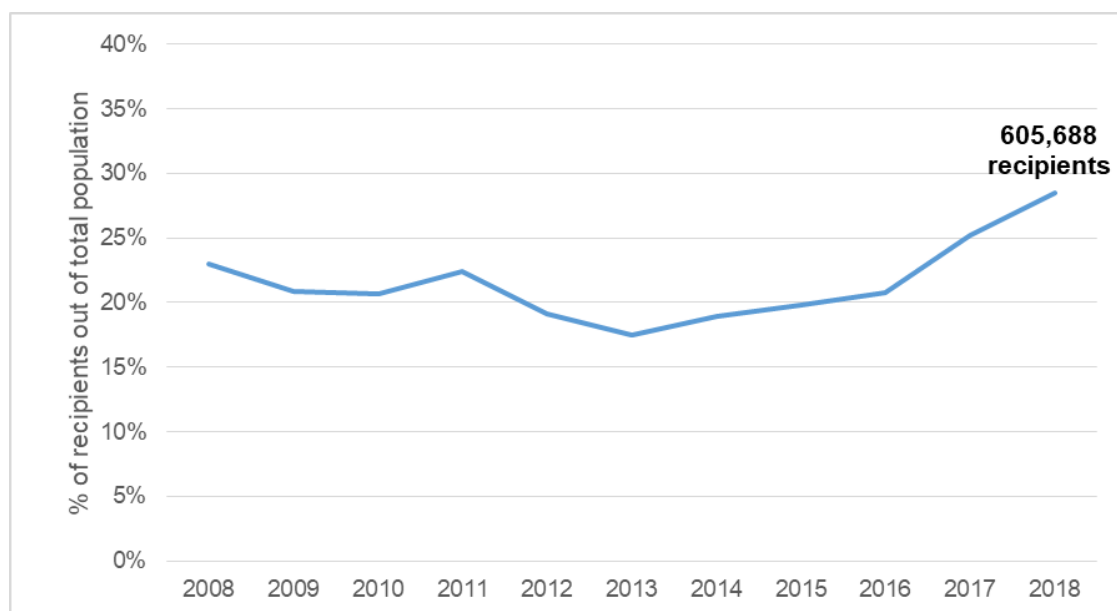
Source: compiled by authors from data provided by the DGAC.

The proportion of citizens residing in the Canary Islands who benefit from the discount when travelling between islands by air is 22%⁹⁴ of the total population (on average, in the 2008–2018 period). We can see (Figure 31) that this percentage progressively increased from 2013, when it was 17%, until 2018, when the percentage of residents benefiting from the discount was 28% (approximately 606,000 recipients). This figure stands out when compared to inter-island routes in the Balearic Islands, where the proportion of recipients of the discount out of the total population is 9%.

On average, each recipient used discounted tickets to travel between islands six times a year during the last decade.

⁹⁴ Information on the population of the Canary Islands has been obtained from the INE (National Statistics Institute).

Figure 31. Variation in percentage of recipients of the discount on inter-island flights out of total residents of the Canary Islands.



Source: compiled by authors from data provided by the DGAC.

3.4.2. Supply

In terms of supply, between 2008 and 2018, an average of four airlines operated inter-island routes in the Canary Islands. In the 2008–2018 period, supply capacity was approximately 4.7 million seats per year, with a weekly average of 1,500 flights and a load factor of 67%.

In the 2008–2018 period, the number of operators that offered their services on these routes always ranged between four and five.

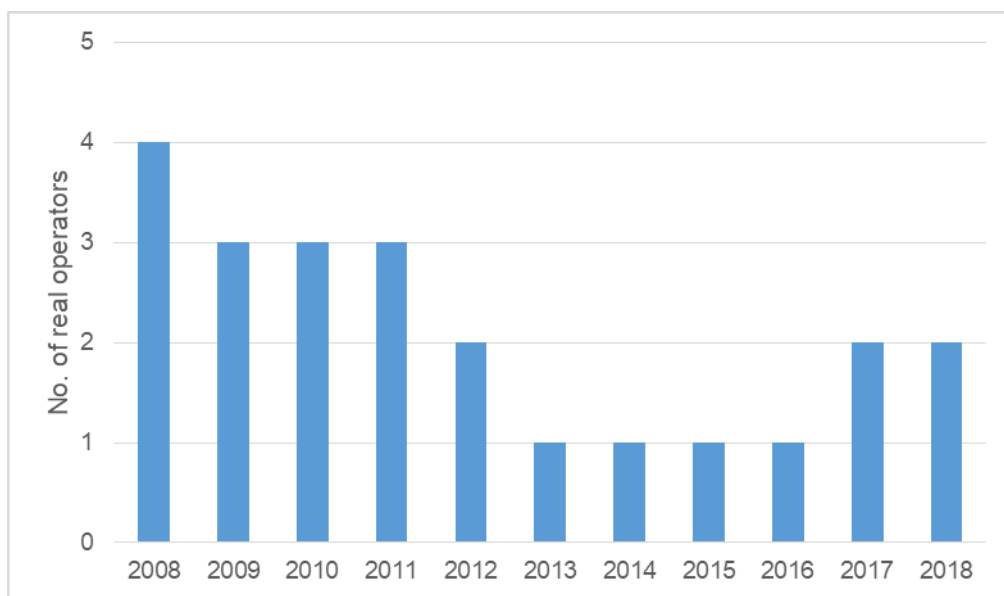
However, it is necessary to consider the relationship between most of the companies operating in this market because of its effect on actual competition. In particular, four of the airline operators⁹⁵ are de facto members of or closely related to the same business group (Binter Group).⁹⁶ This means that the actual number of competitors on inter-island air routes in the Canary Islands has, in recent years, ranged between one and two (see Figure 32). In the winter of 2011, Air Europa left the market, followed by the departure of Islas Airways in the summer of 2012. After that, until the return of Air Europa in autumn 2017, the operators were Binter, Naysa (belongs to Binter) and Canaryfly (closely related to Binter through its

⁹⁵ Binter, Naysa, Canarias Airlines (Canair, their trade name) and Canaryfly.

⁹⁶ Information obtained from the Informa D&B website, as well as the Binter website.

share capital). In June 2019, Air Europa announced its departure from the Canary Island market.

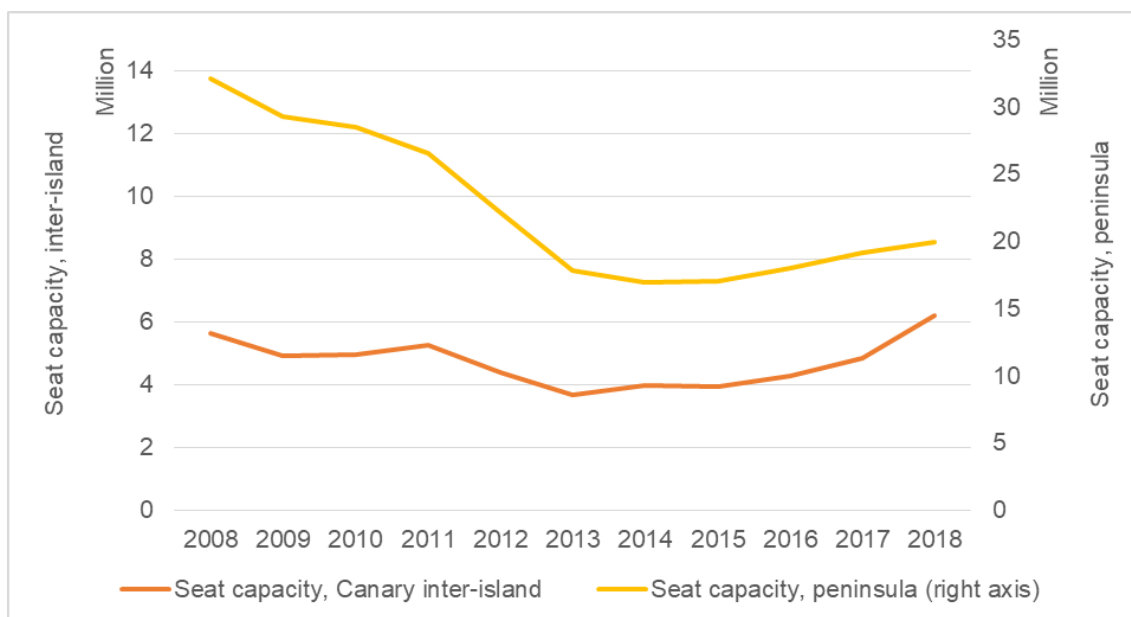
Figure 32. Variation in number of real competitors on inter-island routes in the Canary Islands.



Source: compiled by authors from data provided by the DGAC, as well as information obtained from the Informa D&B website.

As regards variation in supply, in terms of seat capacity, as we can see in Figure 33, it experienced a sharp decrease of 35% between 2008 and 2013. The recovery began to take hold in 2014, speeding up in 2017, and especially in 2018, when the increase was 29% over the previous year. As a result, 2018 supply, in terms of number of seats, exceeded 2008 levels by 10%.

Figure 33. Variation in seat capacity on Canary inter-island routes and peninsular routes.



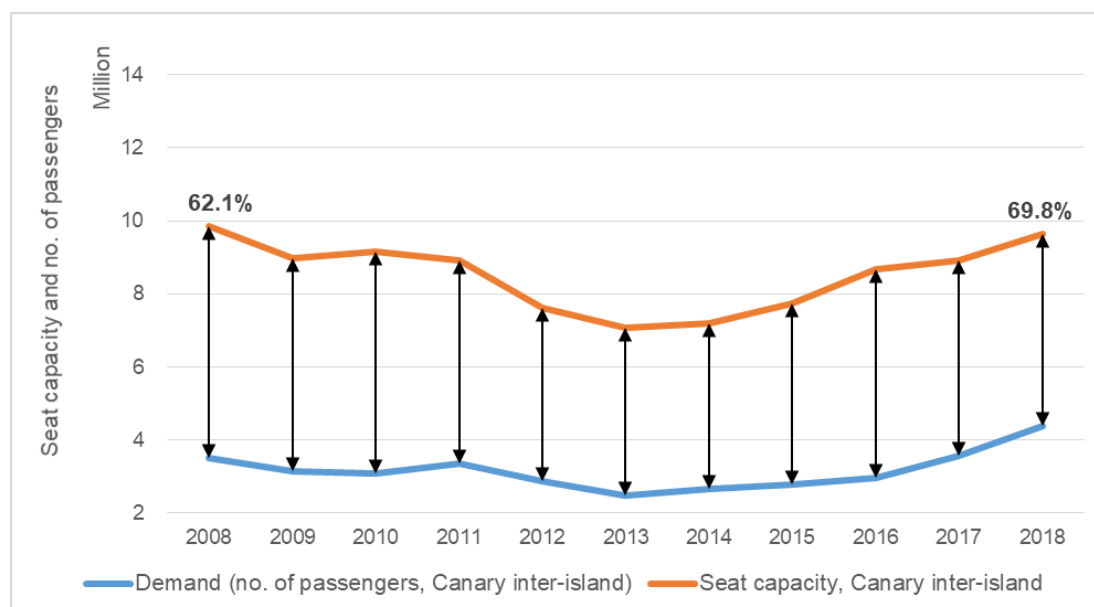
Source: compiled by authors from data provided by the DGAC.

Note: due to the different scale of supply for flights on inter-island routes compared to peninsular routes, their variation has been represented on different axes (inter-island supply, represented by the orange line, on the left axis; peninsular supply, represented by the yellow line, on the right axis).

This trend is similar to the domestic peninsular air transport market, although as with other island routes, it is more favourable on inter-island routes in the Canary Islands: the fall in 2012 and 2013 was less severe than on peninsular routes, and the recovery was earlier and more robust (unlike on Canary Islands inter-island routes, peninsular supply has not returned to pre-economic crisis levels).

Another trend that can be observed in the variation in supply is the increase in the load factor (see Figure 34) that occurred after 2008 (from about 62% to 70%), as in the domestic market (which went from 62% to 80%), although less marked.

Figure 34. Fit between supply and demand on inter-island routes in the Canary Islands, and variation in the load factor.



Source: compiled by authors from data provided by the DGAC.

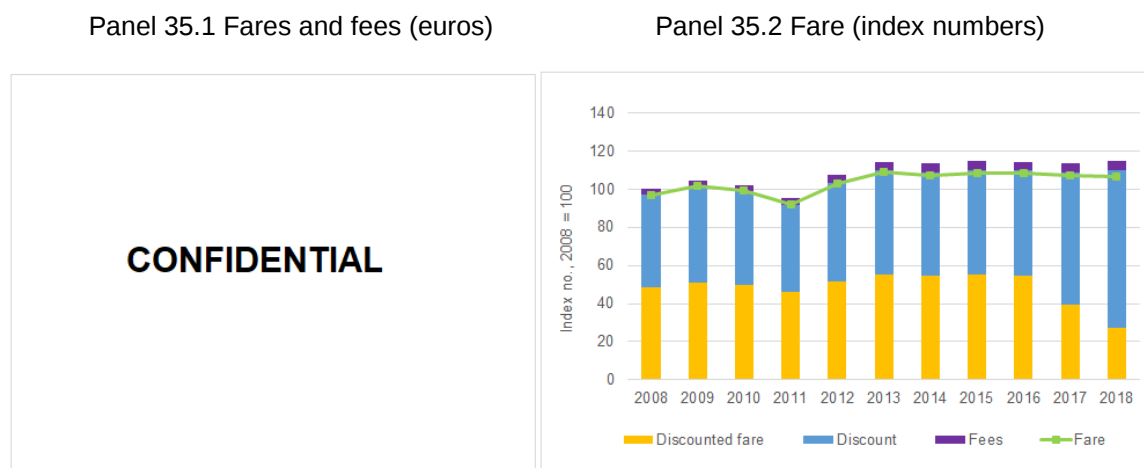
3.4.3. Prices

In this case, unlike Canary Islands–peninsula routes, data are available on the average fare for tickets purchased by both resident passengers and total passengers for the 2008–2018 period. As already mentioned in section 3.1.3, the average fares for tickets purchased by residents and non-residents do not necessarily coincide if the two groups do not follow the same buying pattern, without this implying that the fares offered by airlines are in fact different for the two groups.

For their part, average fares paid for inter-island flights in the Canary Islands⁹⁷ (shown in Figure 35) follow a different trend from the rest of the routes analysed in this study. In the case of Canary Islands inter-island routes, average fares are relatively stable. We see somewhat of a decline until 2011 (5% compared to 2008) and a subsequent increase of 18% until 2013, coinciding with a sharp drop in seat supply (demand also fell, but to a lesser extent), as well as a reduction in competition (from three real competitors to one). Since then, they have remained stable. As a result, average fares were 10% higher in 2018 than in 2008.

⁹⁷ The data on fares and non-discountable fees (green line and purple bar in the graph) relate to total passengers, while the data for discounted fare and discount relate to resident passengers.

Figure 35. Variation in average fares and fees for air tickets for all passengers on inter-island routes in the Canary Islands.



Source: compiled by authors from data provided by the DGAC.

Note: the green line represents the airfare, which is the discountable part of the tickets (the amount to which the discount percentage for residents is applied). Passengers entitled to a discount effectively pay only part of the airfare, that corresponding to the discounted fare (yellow bar), as the discount (blue bar) is deducted for them. Therefore, the final price paid by residents consists of the discounted fare plus the non-discountable fees (sum of the yellow and purple bars). The final price for non-resident passengers (not entitled to a discount) is calculated as the sum of the full fare plus airport fees (sum of the green line and purple bar).

As with Balearic Islands inter-island routes, on Canary Islands inter-island routes the average fare data for tickets purchased by resident passengers do not exactly coincide with each year's data for non-residents,⁹⁸ although in this case, the difference is less visible in the graph,⁹⁹ given that the percentage of residents out of the total number of passengers is very high. In fact, the average fare for tickets purchased by residents increased by 13% between 2008 and 2018, while the average fare paid by non-residents dropped by 17%. As a result of the significant share of residents out of the total, the aggregate average fare grew by 10%. The difference between average fares for resident and non-resident tickets does not necessarily imply discrimination between passengers by airlines, but may be due

⁹⁸ In the case of inter-island routes, it is possible to calculate the average fare paid by non-resident passengers, since information is available on both average fares paid by all passengers (obtained by the DGAC to verify compliance with the PSOs), average fares applied to resident passengers (obtained by the DGAC for the settlement of discounts for residents), and the percentage of the two types of passengers.

⁹⁹ The difference is the distance between the green line (average fares paid by all passengers) and the end of the blue bar (average fare of air tickets purchased by residents before the discount is applied).

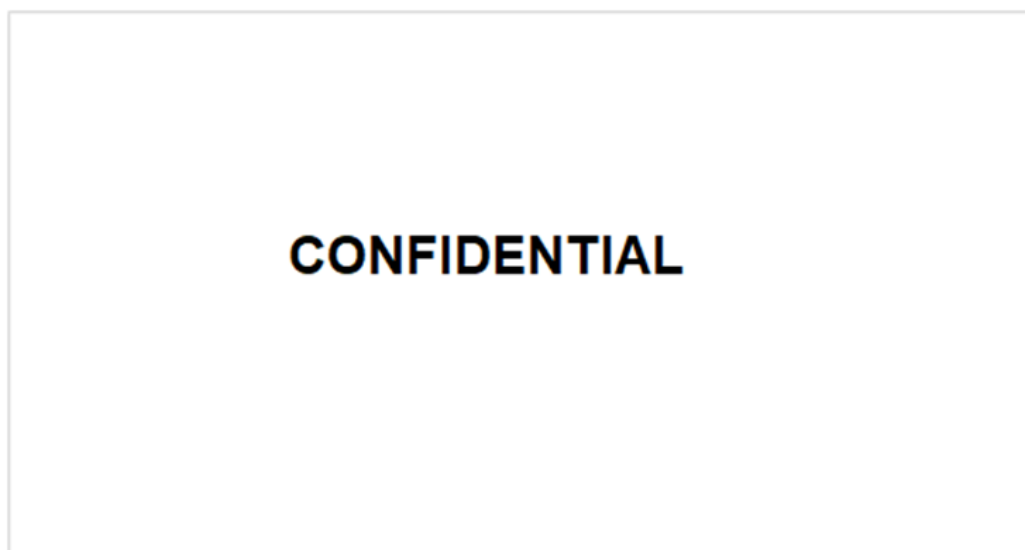
to other factors, such as different purchasing habits among residents and non-residents, as discussed below.

The discounted percentage of the resident fare remained at 50% until mid-2017, when the discount percentage was increased to 75%, meaning that, in aggregate, in 2017 the discount for residents represented 63% of the fare, while in 2018 it represented 75%.

As for the airport fees charged to passengers, which are not discountable (passenger and security fees) and represent an average of 4% of the value of the fare over the entire period, they increased steadily between 2008 and 2014 (66% in total), remaining more or less stable since then.

As a result of the above, average final prices for non-residents have fallen 15% since 2008, while for residents, prices have dropped 38%, once the discount has been applied, with the combined effect of the trend in average fares, airport fees and the increase in the discount percentage.

Figure 36. Variation in final average prices paid by residents (after the discount has been applied) and non-residents on inter-island routes in the Canary Islands.



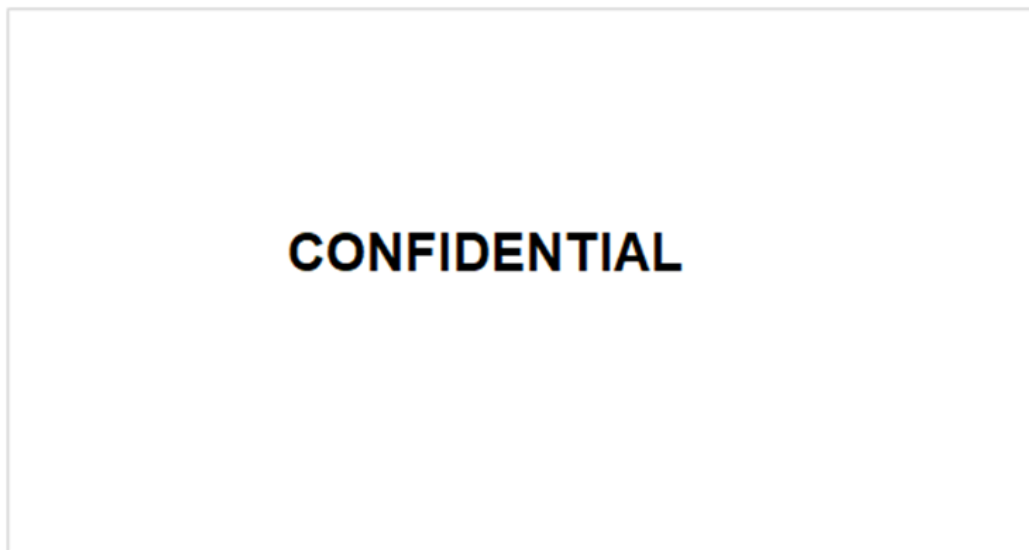
Source: compiled by authors from data provided by the DGAC.

Note: data on average prices for non-residents have been calculated from data on prices paid by residents, prices paid by all passengers, and percentage of residents out of the total.

As with Balearic Islands inter-island routes, 13 of the Canary Islands inter-island routes have PSOs that stipulate a reference fare, determined annually by the Ministry of Transport, Mobility and Urban Agenda for each route, setting a maximum limit on the average fare of all tickets sold.

The average reference fare for Canary Islands inter-island routes increased by an annual average of around 2% between 2008 and 2013, remaining constant from 2013 (Figure 37). Average fares, meanwhile, have been around 13% lower than the reference fare over the entire period.

Figure 37. Variation in the average reference fare and actual fare on inter-island routes in the Canary Islands.



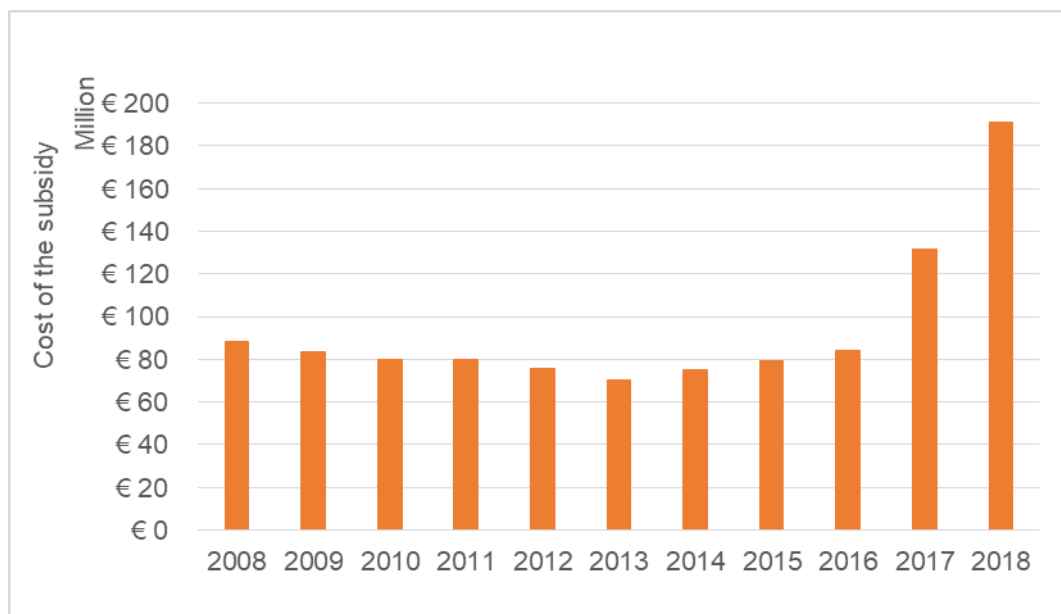
Source: compiled by authors from data provided by the DGAC.

3.4.4. Cost of the discount

As for the cost to the public coffers of the discount for residents on routes between the Canary Islands, between 2008 and 2018 it was, on average, €94.45 million per year.

In the period from 2008 to 2013, it fell steadily, from €88.4 million to €70.3 million, mainly due to declining demand. After that, it grew at an average rate of 6% until 2016, as a result of the recovery in the number of passengers. In 2017, as a result of the increase in the discount percentage and a considerable boost from demand, the cost to the public coffers rose by 56% and in 2018, by 45%.

Figure 38. Variation in the cost of the subsidy for inter-island routes in the Canary Islands.



Source: compiled by authors from data provided by the DGAC.

3.5. Comparative summary

Below is a summary table, making it possible to compare the most important demand, supply and price variables for each of the aggregate routes during the 2008–2018 period.

Table 5. Comparative summary of the different aggregate routes analysed.

Variable	Aggregate Routes			
	Balearic Islands–Peninsula	Balearic Islands Inter-island	Canary Islands–Peninsula	Canary Islands Inter-island
No. of peninsular cities connected to	25	n.a.	19	n.a.
No. of passengers	8.44 million	663,123	6.96 million	3.16 million
Seasonality (summer/winter passengers)	2.26	1.74	1.81	1.57
% passengers out of national total	24%	2%	20%	9%
% residents out of total	36%	70%	37%	86%
% of recipients out of total population	46%	9%	27%	22%
Annual seats	11.4 million	1.06 million	8.52 million	4.73 million
Weekly flights	1,623	312	1,046	1,466
Load factor	73%	62.5%	81%	66.6%
Variation in average resident price, ¹⁰⁰ 2008–2018	-23%	-53%	-25%	-38%
Variation in average non-resident price, 2008–2018	n.a.	-22%	n.a.	-15%
Average cost of the discount, 2008–2018	€97.31 million	€18.36 million	€141.14 million	€94.45 million
Cost of the discount in 2018	€136.37 million	€32.32 million	€203.26 million	€191.12 million
Gap between reference fare and average actual fare	n.a.	16%	n.a.	13%

Source: compiled by authors from data provided by the DGAC.

Note: the data correspond to average data between 2008 and 2018, unless otherwise specified.
n.a. means not applicable.

¹⁰⁰ The average price for residents refers to the price paid by them once the discount has been applied. As mentioned above, the average fares of tickets purchased by non-residents and residents, before applying the discount, do not necessarily coincide, since the purchasing patterns of the two groups may differ.

4. THEORETICAL ANALYSIS OF MEASURES TO SUPPORT AIR CONNECTIVITY

There are various measures which can be used to implement public policies to support air connectivity in peripheral regions. The aim of these measures is to facilitate air transport for the population, connecting remote territories, or to compensate for conditions of isolation, with the ultimate aim of social cohesion and economic development.

These connectivity support policies are often implemented through systems involving discounts on the price of air tickets for residents, which can be designed in a variety of ways. However, other alternatives, such as public service obligations, are also available.

In this section, and with no claim to exhaustiveness, alternative measures to support the connectivity of peripheral territories are studied from a theoretical point of view, with special attention to discount systems. Each possible measure generally results in positive and negative effects, the specifics of which depend on the circumstances in each case. The functioning of the measures, their possible forms of implementation, and the advantages and disadvantages of each measure will be analysed from the perspective of competition and efficient economic regulation.

4.1. Discounts on airline ticket prices for residents

4.1.1. Common aspects

This aid takes the form of price reductions on airfares received by residents of the benefiting regions. The difference between the airfare and the price paid by residents is financed by the State.

There are several ways to implement the discount, but regardless of their design, all discounts for residents have common effects (although there are particularities that are discussed below).

Effects of discounts (regardless of design)

The discount, in the first instance, reduces the cost that residents must pay for air transport, supporting the social and territorial cohesion of benefiting regions by fostering their connectivity. In addition, citizens are compensated for the higher economic cost they bear due to conditions of isolation. This reduction in the cost borne by residents may facilitate access to air transport for citizens who previously could not afford to travel by air because of the cost, or increase their consumption.

Apart from the direct effect sought by the government in introducing subsidies on airline ticket prices (reduction of the cost paid by recipients of the aid), the price

discount for residents has a number of additional effects which must be taken into account.

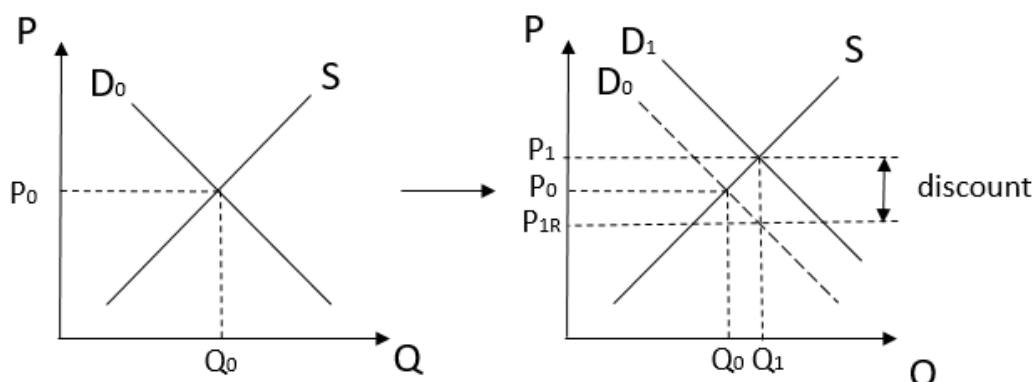
This type of aid, insofar as it makes air transport cheaper for some users, has a growth effect on demand, since recipients of the discount will tend to demand more air tickets as they receive prices lower than those in the previous situation. Increased demand will have a dual effect:

- One, there will be an increase in the equilibrium quantity for the market (more tickets will be consumed) and an increase in final prices (excluding the discount), which will be those received by airlines and those paid by passengers who are not entitled to the discount (non-residents).
- Two, increasing the demand for and price of airline tickets will increase the profitability of routes, and this may incentivise increased flight supply and the entry of new airlines, in which case, the impact on prices will be mitigated.

In other words, part of the aid to residents will be transferred to airlines in the form of higher revenues, with the increase in the equilibrium price and the amount of tickets sold (the effect known as tax shifting). This partial shift of the subsidy will take place, at least in the short term, even in a perfectly competitive environment, and will undermine the government's aim.

A graphical explanation of the effects of a subsidy on resident consumers can be seen in Figure 39.

Figure 39. Effects of a discount* for residents.



The graph shows how applying a discount on the price has the effect of increasing demand, resulting in an increase in the equilibrium number purchased and prices. S = supply, D_0 = initial demand, D_1 = demand after the discount is introduced, Q_0 = initial number of flights purchased, Q_1 = number of flights purchased after introduction of the discount, P_0 = initial price, P_1 = market prices after the discount is introduced, P_{1R} = prices received by residents after the discount is introduced. *The discount illustrated is a fixed-value subsidy per flight.

Source: compiled by authors.

Given the existence of the shift effect, it is necessary to consider which factors it is determined by, and how they can be minimised from a regulatory standpoint to make the price discount for residents as effective as possible.

The extent to which a subsidy shifts to prices depends fundamentally on the **characteristics of supply and demand**. Specifically, it depends on how sensitive these are (how supply and demand vary) to price changes, a concept known as price elasticity. In short, the greater the elasticity of demand, the greater the increase in demand by residents in response to establishing discounts, and, therefore, the greater the upward pressure on the price. As regards supply, the greater its elasticity, the greater its adaptation to increases in demand, and, therefore, the lower the pressure on prices due to establishing a discount. The final result will depend on the combined interaction of both curves. The factors that may influence demand and supply behaviour are discussed in more detail below.

Demand-side factors

The more sensitive (elastic) **demand** from residents is to the perceived price drop as a result of the discount, the greater the increase in air transport demand and consumption, as well as the upward pressure on the final equilibrium price. Thus, the more residents react to increases in the discount, the greater the upward pressure on prices, and the more the discount may be transferred to airlines, which will see their revenues swell and pocket a larger portion of the subsidy (the

tax shift effect will be higher), making the discount less effective, as it does not fully benefit residents. Various factors influence the sensitivity of resident demand to changes in prices.

Firstly, the nature of air transport needs: if residents usually travel for essential reasons – such as medical causes, or due to work, bureaucratic or other obligations – demand will tend to be more inelastic, as citizens will vary their consumption little based on price, as their travel is determined by such needs; whereas if the demand for air transport is not as much for essential reasons as other reasons, it will be more elastic, as residents will alter their consumption pattern, taking the price factor more into account.

Whether or not there are alternatives to air transport services also influences passenger price sensitivity, because if there are no travel alternatives, demand elasticity will be less, since they will be required to use air transport to get around.

Another factor influencing demand sensitivity is the ticket price relative to the income of residents (except for very low-income residents). If the price represents a very high share of their income, changes in the same will affect them more intensively and they will respond by altering their consumption to a greater extent (increased elasticity).¹⁰¹

Additionally, the higher the percentage of residents out of the total number of passengers, the greater the impact of the discount on overall demand for airline tickets, and therefore the greater the shift of this subsidy to prices, limiting the beneficial effect on residents and having a detrimental effect on non-residents. In contrast, if the percentage of non-residents is high, airlines will have less incentive to increase ticket prices, as they would risk losing some of these consumers.

Supply-side factors

In response to the upward pressure on prices set in motion by the discount, airlines have incentives to react by increasing **supply**, i.e. the frequency of flights and the number of seats available. The more sensitive supply is to price increases, that is, the greater its capacity or incentives to increase the number of flights or seats offered in response to price increases (price elasticity of supply), the greater its ability to mitigate demand pressure will be, and therefore, the lower price increases will be, possibly even remaining at the initial level if supply increases so much that it manages to absorb the full expansion of demand (although, in the short term, it would be very difficult for this to happen).

¹⁰¹ Parkin, Powell & Matthews (2005).

The elasticity of the supply curve is influenced by various factors that affect the incentives and the ability of airlines to increase air transport supply. These must be taken into account when designing discount systems for residents.

Firstly, in terms of incentives, the competitive environment plays an essential role. The greater the degree of competition in the market, the greater the incentives airlines have to increase supply and absorb higher demand, containing price increases due to this competitive pressure. In the absence of this tension introduced by competitors, operators will have incentives to increase prices, thus obtaining an extraordinary profit.

Secondly, airlines' optimal commercial strategy to maximise their profits involves adjusting their supply to the characteristics of demand at any given time. Resident and non-resident passengers have different characteristics, some of which are intrinsic (such as the nature of their reasons for travel), while others are brought on by the fare discount (such as residents' lower price sensitivity and, consequently, their greater willingness to pay). Therefore, their buying patterns may differ, for example, in terms of length of advance ticket purchase, times, ticket type or what airline they fly with. If airlines are able to distinguish between these different buying patterns, they have incentives to offer higher fares for tickets purchased a certain amount of time in advance or for times where there is a high number of passengers who are very willing to pay (which will be the case for residents, as they have a 75% discount), without their doing so entailing explicit discrimination on geographical grounds. As a result, given the discount for residents that limits their price sensitivity, the greater the ability of airlines to identify the buying patterns associated with residents, the more incentive they will have to adjust their supply by increasing the fares offered according to these patterns, thus causing more of the discount to shift to prices.

Also, in addition to incentives, another factor influencing the extent to which the discount shifts is the ability of carriers to increase supply. In the short term, airlines may have difficulties increasing the number of flights or seats offered, if factors (such as the slot allocation system or fully used airport capacity) prevent them from adapting quickly to the circumstances. These short-term rigidities will mean that, in response to increases in demand, the discount will shift to prices, at least at first. However, in the medium and long term, supply can more easily adapt to demand (it is more elastic), meaning that airlines could adjust their capacity, or new airlines may enter. Therefore, the price increase effect may be mitigated or even neutralised.

Several studies have analysed the relationship between resident discounts and prices,¹⁰² and most of them conclude that this type of aid results in higher prices, rather than greater supply, especially if obtaining new slots to increase flight frequencies or establishing new lines is costly. However, the literature shows that the effects of price discounts depend heavily on the situation and the peculiarities of each market. For example, in markets where entry costs are not high, and where the proportion of passengers receiving the subsidy is high enough, when demand expands, resident discounts have a positive effect on the level of competition in the market, as they encourage the entry of new companies, and on flight frequencies offered by airlines¹⁰³ (therefore, excess demand could be absorbed by an increase in supply), so that price increases are minimised or even prevented.¹⁰⁴

Other effects

An additional indirect effect to be considered is that, if prices rise, some passengers (non-residents) may be crowded out of the market because they are not willing to pay higher prices.¹⁰⁵ This effect should be taken into account when designing the discount, especially in territories where the economy depends heavily on tourism.

The impact of a discount on the cost to the public coffers should also be evaluated, given that it is the State that is responsible for financing it. The higher the individual amount of the subsidy, the rate and the number of recipients, the higher the cost will be for the public coffers. Since the discount can increase the number of passengers who demand air services by lowering the price they pay, the amount needed to finance this measure may be very high.¹⁰⁶

Additionally, as the cost of the discount is borne by all taxpayers, depending on the characteristics of the residents benefiting from the discount, it may be regressive. If the resident passengers who fly the most between islands or to/from the peninsula are those with the highest income, they will benefit most from the measure and therefore, revenue will be redistributed inequitably.

Conclusion

In short, a discount on airline ticket prices for residents will increase their demand for tickets, putting upward pressure on prices. The extent to which the discount

¹⁰² Calzada & Fageda (2012), Fageda, Jiménez & Díaz (2012), Fageda, Jiménez & Valido (2017).

¹⁰³ Calzada & Fageda (2014).

¹⁰⁴ Socorro & Betancor (2019).

¹⁰⁵ Valido et al. (2014).

¹⁰⁶ Fageda et al. (2016).

will benefit residents or be shifted in the form of higher prices will depend on demand sensitivity to price changes, as well as the percentage of residents out of the total number of travellers, and on the sensitivity of the supply.

Having analysed the common effects of subsidies for residents, the various ways they are implemented are discussed below, each with a number of particular advantages and disadvantages.

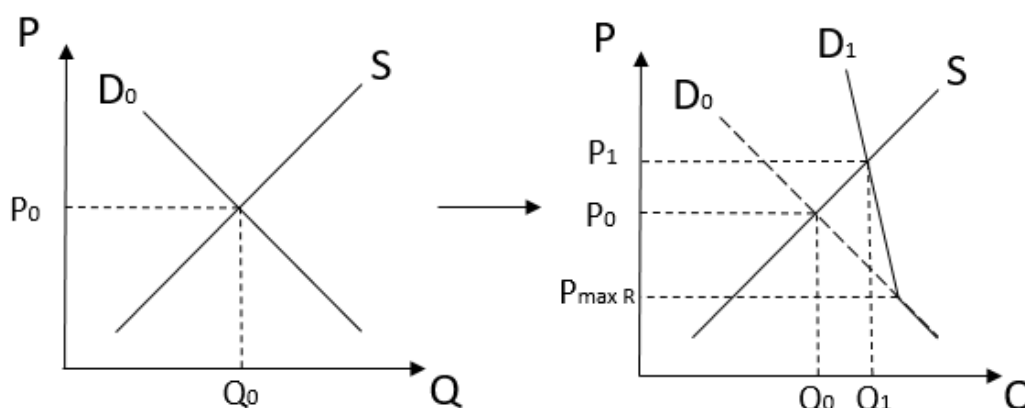
4.1.2. Price discounts based on maximum amounts paid by residents

One possibility for discounting ticket prices is to set maximum amounts to be paid by residents, so that the resident subsidy is equal to the difference between the market fare and the maximum amount set, if the former is higher. For example, if the maximum amount to be paid by residents was set at €50, and the ticket price was €70, the State would finance the difference of €20; while if the fare for another ticket was €45, the resident would pay the full price.

The main advantage of this type of discount over the other alternatives, which we will see below, is that it makes it possible to guarantee affordable prices for residents (the prices paid by this type of traveller will always be less than or equal to the maximum set).

However, after this measure is introduced, there will be a drop in overall demand elasticity as, for residents, demand becomes completely inelastic for price values above the maximum amounts, since they will only pay the latter amount. As a result, in the event airlines increase prices above that maximum amount, they will not reduce their demand in any case. This will make it possible to set high prices, to the detriment of non-residents, who may be crowded out of the market, also causing the cost of the discount to the public coffers to increase greatly.

Figure 40. Effects of a discount for residents based on maximum amount paid.



The graph shows how applying a discount based on a maximum amount paid by residents has the effect of increasing demand and the curve for price values above the maximum amount to be paid, as residents become totally insensitive to price (the lower price sensitivity, the greater the angle of the demand curve), which results in an increase in the equilibrium number purchased and prices. S = supply, D_0 = initial demand, D_1 = demand after the discount is introduced, Q_0 = initial number of flights purchased, Q_1 = number of flights purchased after introduction of the discount, P_0 = initial price, P_1 = market prices after the discount is introduced, $P_{\max R}$ = maximum amount paid by residents after the discount is introduced.

Source: compiled by authors.

In addition, the maximum amount may function as a floor for fares, as it creates a strong incentive for airlines to increase prices and set them above that level (stronger, the higher the percentage of residents), given the complete price inelasticity of resident demand (for prices above the maximum amount). This will allow them to apply any higher price without affecting the amount of demand by recipients of the measure.

4.1.3. Fixed-value per flight subsidies for residents

Fixed subsidies consist of predetermined amounts given to residents per trip, which is usually conditional on the ticket price exceeding the amount of this subsidy.

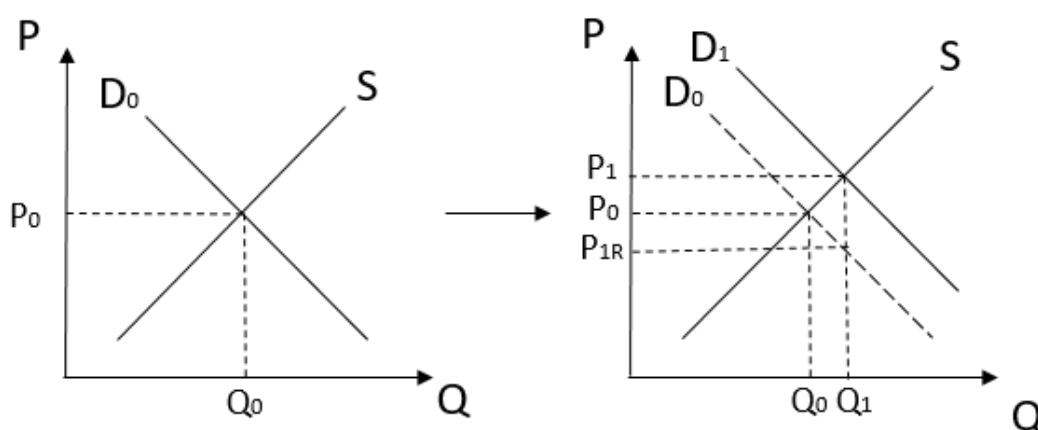
This form of discount is easier to manage than the other methods, since the subsidy is always the same and does not depend on the value of the ticket purchased.

However, when it comes to determining the amount of the subsidy, design can be complex. If the value of the subsidy is low, it will not foster connectivity for recipients. On the other hand, as it is a condition for receiving aid that the price

be higher than the value of the subsidy, it may serve to establish a floor for fares, just as occurs with discounts based on maximum prices to be paid by residents.

However, the price distortion is less than in the case of discounts in the form of maximum amounts to be paid by residents, and as we shall see, than in the case of percentage discounts, since the price elasticity of demand does not vary, as the aid is a fixed amount, regardless of ticket price.¹⁰⁷

Figure 41. Effects of a fixed-value discount for residents per flight.



The graph shows how applying a discount on the price has the effect of increasing demand, resulting in an increase in the equilibrium number purchased and prices. S = supply, D_0 = initial demand, D_1 = demand after the discount is introduced, Q_0 = initial number of flights purchased, Q_1 = number of flights purchased after introduction of the discount, P_0 = initial price, P_1 = market prices after the discount is introduced, P_{1R} = prices received by residents after the discount is introduced.

Source: compiled by authors.

4.1.4. Percentage discounts on prices for residents

This aid takes the form of reductions in the fare applied by airlines at a certain percentage. This is the current system in Spain.

It should be noted that as percentage discounts increase demand for airline tickets, route profitability increases, and they can encourage the entry of new airlines, as was the case of the two previous designs. However, as a particular advantage of percentage discounts, by not establishing a fare floor, the increase in competition will make more effective price containment possible. Regarding this, after comparing the effect on prices of percentage discounts and discounts

¹⁰⁷ This statement is valid if we consider a demand function with constant elasticity, a function frequently used in studies on tax incidence (Kiso, 2018).

in the form of a maximum amount paid by residents in different European countries, Fageda, Jimenez and Valido (2017) conclude that discounts in the form of percentage discounts cause a lower price increase.

Furthermore, Socorro and Betancor (2019) theoretically demonstrate that in the presence of an ad valorem subsidy, if residents represent a high enough share of demand, the increase in the discount percentage can cause a potential competitor to find it profitable to enter the market. In this situation, increasing the subsidy will increase competition, increase connectivity, and minimise the shift effect to prices. However, if profitability is not sufficient for a new company to enter, when the discount percentage is increased, the established airline will raise prices to pocket part of the subsidy, extracting part of the consumer surplus and crowding some non-resident passengers out of the market.

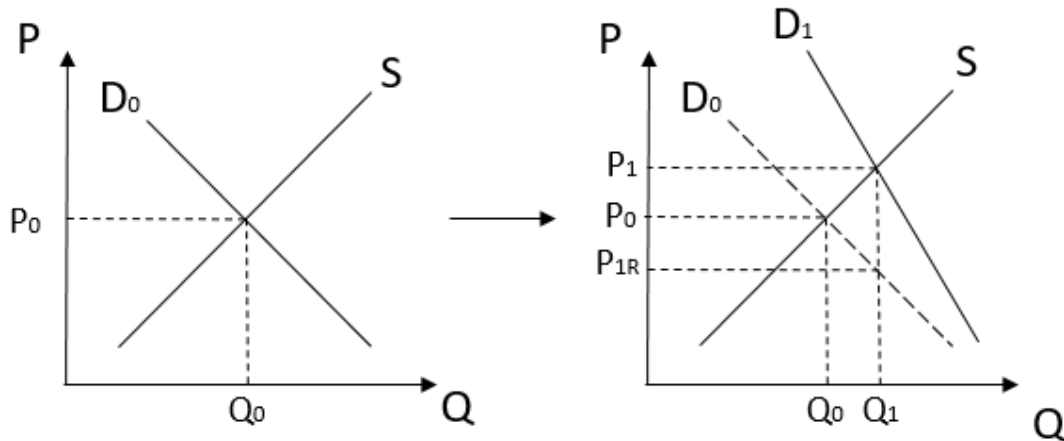
The latter effect is caused by the main drawback of this measure: it causes a decrease in the elasticity of the demand curve¹⁰⁸ (passenger price sensitivity), to a greater or lesser extent depending on the proportion of residents out of the total number of passengers and depending on the percentage of the discount. This decline in elasticity is due to the fact that, after the subsidy is introduced, for each euro the ticket price increases, the increase for residents is lower than the real increase. For example, if the discount is 75%, for every €10 the price increases, residents will only see an increase of €2.5 (the remaining €7.5 being paid by the State), and will react by reducing their consumption much less than if they had to pay the real price increase. This means that airlines will be able to increase prices without this resulting in as sharp a drop in demand as in a situation without a subsidy.

However, this decline in demand elasticity will be less than in the case of maximum amount discounts to be paid by residents, where resident demand becomes completely price inelastic.¹⁰⁹

¹⁰⁸ Calzada & Fageda (2012), Fageda et al. (2016) and Ramos-Pérez (2018).

¹⁰⁹ For prices above the maximum amount set.

Figure 42. Effects of a percentage discount on price.



The graph shows how applying a discount on the price for residents causes an increase in demand and an increase in the demand curve, as resident price sensitivity is reduced (the lower price sensitivity is, the steeper the demand curve will be), resulting in an increase in the equilibrium number purchased and prices. S = supply, D_0 = initial demand, D_1 = demand after the discount is introduced, Q_0 = initial number of flights purchased, Q_1 = number of flights purchased after introduction of the discount, P_0 = initial price, P_1 = market prices after the discount is introduced, P_{1R} = prices received by residents after the discount is introduced.

Source: compiled by authors.

Lastly, Valido, Socorro, Hernandez & Betancor (2014) theoretically compare the price distortion effect of a fixed subsidy with respect to an ad valorem subsidy (price dependent, such as a percentage discount on the fare or the discount based on maximum prices paid by residents) in a context in which operators have market power, and conclude that the superiority of either method in terms of social welfare depends on the willingness of consumers to pay and the percentage of residents out of the total number. When a resident discount (either fixed or ad valorem) is applied, if the proportion of residents is high, non-residents may find themselves crowded out of the market. On the other hand, if there is a low proportion of passengers willing to pay high prices, then a fixed subsidy will have better results in terms of price containment and less crowding-out of non-resident passengers than an ad valorem subsidy. Therefore, it is necessary to evaluate each particular case to make conclusive comparisons in terms of welfare.

4.1.5. Possible ways to mitigate the negative effects analysed

If the discount has the unintended effect of increasing prices, causing a portion of the subsidy to be pocketed by airlines, one thing that may be considered to

ameliorate this is measures that support the adaptation of supply to increases in demand (which increase supply elasticity) and reduce the impact on prices. Measures that could be beneficial in this regard may include the removal of unnecessary or disproportionate barriers to competition;¹¹⁰ more efficient airport management,¹¹¹ in order to make greater use of capacity; better slot allocation; increasing efficiency in other services necessary for air traffic, such as air traffic services;¹¹² encouraging the entry of new players into the market; or increasing investment in congested airports.

Demand-side measures can also be implemented to mitigate price increases. One possible solution to the problem of the decline in demand elasticity among resident passengers would be to establish an ex-post settlement system for the subsidy. In other words, a system whereby passengers pay the full ticket price when they make their purchase, requesting payment of the subsidy from the government at a later point. This could generate a certain awareness effect around the actual cost of their trip and temper the decline in their price sensitivity. The problem with this design is that management can be complicated.¹¹³

4.2. Other measures to support air connectivity

4.2.1. Obligations regarding frequency, capacity or other conditions of service (public service obligations)

The general scheme for this type of aid consists of establishing a set of conditions that must be met by all airlines wishing to operate protected routes. They include frequency, capacity or price requirements, among others. Compliance with these requirements can be done as a free market regime, so that any operator that meets the established requirements can become an operator on the route (open PSOs), or mean that the market is reserved for a single airline (restricted PSO), which can be compensated financially for providing the services under the established conditions.

From the point of view of the principles of competition and efficient economic regulation, the establishment of such obligations is only permissible when the market alone does not provide minimum standards of connectivity in protected

¹¹⁰ Fageda et al. (2017).

¹¹¹ CNMC (2014).

¹¹² CNMC (2018).

¹¹³ The alternative of an ex-ante discount is a system whereby airlines offer resident passengers the fare with the discount already applied, and the airlines then carry out a settlement with the government.

territories (in terms of frequency, capacity, prices, destinations, etc.),¹¹⁴ and provided that they are established in a proportional and non-discriminatory manner.

As an advantage of this type of measure, it should be noted that PSOs ensure specific connectivity conditions, as they directly affect them.

However, PSOs can have a negative impact on competition in the market. As minimum conditions for service delivery are required, PSOs disincentivise the entry of airlines wishing to provide services below that minimum, even though their entry would improve overall market connectivity conditions. On routes with low passenger volume, they may favour the existence of a small number of carriers, since the entry of new airlines is not profitable if they have to meet the same conditions as established carriers. In extreme cases, it may happen that no airline is willing to comply with the terms of the PSO. In these cases, public administrations may choose to support airlines with subsidies, generally by introducing a restricted PSO.

Empirical analyses show mixed results regarding the effects of PSOs. Some analyses conclude that on routes where PSOs exist, more frequent flights are offered than on unregulated routes with similar characteristics.¹¹⁵ With regard to prices, empirical evidence does not yield clear results: there is evidence to support the thesis that on routes with PSOs, prices are lower than on unregulated routes with similar characteristics,¹¹⁶ while other studies conclude that PSOs are not effective at containing prices, and that the specific design of the PSO greatly influences the result.¹¹⁷

In the case of open PSOs, the number of competitors is not limited, and the obligations are the same for all operators. Additionally, open PSOs do not entail public compensation and therefore have no impact on public finances. In the case of restricted PSOs requiring compensation to be operated, the amount of public funding is usually much lower than for resident discount measures.¹¹⁸

¹¹⁴ Article 95 of Act 2/2011.

¹¹⁵ Calzada & Fageda (2012)

¹¹⁶ Calzada & Fageda (2012)

¹¹⁷ Calzada & Fageda (2013), Fageda, Jimenez & Valido (2017).

¹¹⁸ For example, in Spain, according to information obtained from the European Commission (https://ec.europa.eu/transport/modes/air/internal-market/psa_en), as well as from the public sector procurement platform (<https://contrataciondelestado.es/wps/portal/licitaciones>), expenditure on PSO compensation in island territories was approximately €2.5 million for 2018, while expenditure on discounts for residents of the archipelagos was €563 million. In the case of Scotland, according to information obtained from the European Commission, as well as from the Scottish Government (<https://www2.gov.scot/Publications/2018/12/9450/360666>),

Furthermore, the impact of such measures on the market will depend on the particular conditions established, but they can lead to undesirable negative effects if the principles of necessity, proportionality and minimal distortion are not met. Depending on the characteristics of demand, supply, and the conditions established in the PSOs, the requirements imposed on airlines may introduce rigidities and distortions, reduce their profitability and disincentivise remaining in the market.¹¹⁹ This, in turn, may require the establishment of restricted PSOs and for the State, i.e. the taxpayers, to bear the cost of compensation.

Additionally, if the eligibility conditions for routes are not well defined, this may result in unnecessary restrictions on competition. In fact, some studies¹²⁰ are critical of the fact that the declaration of PSOs is often arbitrary or not sufficiently justified, since PSOs are declared on short routes, where other means of transport could be a viable alternative, or on routes with high traffic density, where there would be no need to establish them, given that free competition could guarantee their connectivity.

Lastly, the establishment of minimum conditions may have other undesirable effects, such as worsening the aspects of service quality that are not part of the conditions regulated in the PSO.

In the case of routes reserved for a single company, it is also essential that the market closure and their award be carried out in accordance with the principles of necessity (the market can only be restricted if no operator is willing to operate the route under competitive conditions because there is no commercial interest and provision of the service is necessary), proportionality and non-discrimination, to cause minimal distortion of competition and achieve greater efficiency. In this regard, some authors¹²¹ are critical of the fact that public procurement proceedings may often be detrimental to competition if they are not conducted under the proper conditions, including transparency.

Others point out that reserving the market for a single company may result in a loss of incentives to improve the efficiency of service delivery if public tendering systems do not adequately foster market competition, for example because the time allowed between award of the contract and the start of operations is too limited.¹²²

annual expenditure on PSO compensation is €4.97 million, compared to €17.20 million for payment of discounts for residents.

¹¹⁹ Santaló (2013).

¹²⁰ Williams & Pagliari (2004), Calzada & Fageda (2014), and Fageda et al. (2018).

¹²¹ Fageda et al. (2018).

¹²² After an empirical analysis in different European countries, Merkert & Hensher (2013) concluded that the lack of incentives for efficiency improvements is due to the fact that

4.2.2. *Price regulation: fixed, maximum and reference fares*

Another measure frequently used to try to ensure affordable air connectivity for peripheral territories is to establish air ticket price regulation measures on certain routes, either within or outside the framework of PSOs. It is possible to establish fixed prices for all travellers (or certain groups, such as residents), maximum fares which tickets cannot exceed, or reference fares (average price of tickets sold must be equal to or less than this reference), which can be combined with price brackets (minimum and maximum).

Price regulation, although it can be established to pursue legitimate socio-economic goals (such as connectivity of peripheral regions), should be avoided as much as possible¹²³ and should only be implemented if very particular circumstances are met, as it is one of the most distorting regulatory interventions and places serious restrictions on competition. Price regulation prevents prices from being determined by supply and demand forces and does not therefore make it possible to adjust to market circumstances by this means. This can lead to significant inefficiencies, to the detriment of the consumer, as well as limiting freedom of enterprise. It is therefore justified only when there is no other measure less restrictive of competition capable of ensuring island connectivity, and provided that it fulfils the principles of efficient economic regulation.¹²⁴

The literature shows that these controls can have harmful effects in the long term, such as reducing the efficiency of production, limiting the adoption of new technologies and decreasing service quality. In addition, it is possible that the pace of entry of companies will be lower in markets with regulated prices, due to the reduced profitability of the economic activity.¹²⁵

Several studies analyse the effect of price regulation within the framework of PSOs, with disparate results. For the Spanish case, Calzada & Fageda (2012) find that on routes where there are PSOs with price regulation, prices are lower than on unregulated routes with similar characteristics. In contrast, based on an empirical analysis conducted in different European countries, Fageda, Jiménez & Valido (2017) conclude that price limits within the framework of PSOs are not

often the number of bids submitted in tender processes is very low (frequently only one), and the time allowed between award of the contract and the start of operations is short, which disincentivises operators with little capacity to prepare to operate in a limited period of time after submitting a bid.

¹²³ OECD (2011).

¹²⁴ Necessity, proportionality, minimum distortion, efficiency, transparency and predictability (CNC, 2008).

¹²⁵ OECD (2011).

effective to contain them, meaning that these limits are not less than the prices that would exist in the context of a free market.

Lastly, price regulation requires calculating and substantiating a price according to objective criteria, taking into account market conditions and considering the costs of an efficient operator, which can present considerable challenges.¹²⁶

As regards analysis of the different subtypes of price regulation, fixed fares have the advantage of having greater administrative simplicity than other possibilities, but they introduce absolute price rigidity, so that operators lose the ability to compete on this variable, and they cannot adapt their supply to changes in demand via prices. This makes it the most distorting price regulation measure, and it should be considered as the last resort in the event all remaining intervention measures are ineffective.¹²⁷

Maximum fares provide some flexibility for operators when setting prices, compared to the previous system. As long as they do not exceed the maximum, airlines can adjust their prices. However, setting maximum prices also introduces distortions and may limit competitive dynamics,¹²⁸ as if the maximum fares are lower than average operating costs, airlines will have no incentive to operate in the market and may be crowded out, and if they are higher, they can function as an anchor for fares or even make price coordination easier for companies.¹²⁹ Moreover, to the extent that they cannot set prices higher than the limit, they will seek to recover the revenue they cease to receive by raising the average price they charge, so the measure may be counterproductive.

Finally, reference prices provide the system with greater flexibility than the previous two systems, since they allow prices to fluctuate upwards and downwards, adapting to market conditions, but always maintaining an average price that cannot be exceeded. However, although to a lesser extent than previous systems, reference prices also reduce competitive pressure and may introduce inefficiencies that must be taken into account by the government when considering implementing this price regulation.

¹²⁶ CNMC (2017).

¹²⁷ CNMC (2017).

¹²⁸ As acknowledged in Order FOM/1085/2008, of 7 April, replacing the system of maximum fares with reference fares in public service obligations on air routes between the Balearic Islands.

¹²⁹ Santaló (2013).

4.2.3. Tax aid linked to travel

Another possible measure to support connectivity in certain regions is the establishment of tax aid for residents linked to travel.

In so far as it stimulates demand for air transport, it will also have the same effects as discounts, namely: an increase in the equilibrium quantity, an increase in prices, and an incentive for the entry of competition. However, the advantage of this type of measure is that residents are responsible for paying the entire price of the ticket at the time of purchase, although they later receive the appropriate compensation on their tax return. This will increase their price sensitivity and partially mitigate the increase in fares that can occur with systems involving discounts on airline ticket prices.

However, the disadvantage of this type of aid is that, depending on its design, it may be regressive, benefiting higher-income residents more and lower-income residents little or not at all.

4.2.4. Direct transfers or tax aid not linked to travel

Another possibility is establishing aid not linked to travel, in the form of direct transfers (an annual unconditional cheque) or income tax reductions or deductions for residents.

The advantage of these is that by not specifically encouraging travel, they do not cause distortions in the air transport pricing system. However, this is not a system that improves connectivity (since the amount of aid does not increase with the number of trips made, thus proportionately providing more benefits for those residents who travel the least), but rather a system of compensation for residence status in certain regions. In addition, as in the case of aid linked to travel, depending on its design, aid not linked to travel could be a regressive measure.

Finally, both types of design have an impact on the public coffers: direct transfers involve the disbursement of public funds, and tax aid represents decreased revenue.

4.3. Theoretical comparison of different measures

Table 6. Advantages and disadvantages of each support measure for connectivity.

EFFECTS OF EACH SUPPORT MEASURE FOR CONNECTIVITY		
Measure	Advantages	Disadvantages
Price discounts (effects common to all three designs)	- Reduces final price for residents - Greater connectivity - Incentivises entry of competitors	- Fares increase - May crowd non-residents out - Cost to the public coffers - May be regressive
a) Maximum amounts paid by residents	- Guarantees affordable prices	- Resident demand becomes totally price insensitive - Sharp increase in fares - Sets a floor for fares
b) Fixed-value subsidies per flight	- Simple management - Complex design - Does not affect the price sensitivity of resident demand - Less price distortion	- The subsidy sets a floor for fares
c) Percentage discounts	- Does not set a floor for fares - Smaller price increase than discount a)	- Resident demand becomes less sensitive to price - With high % of residents and discount: sharp increase in fares
Obligations for frequency, capacity and other conditions (PSO)	- Ensures connectivity - Open PSOs: allow competition and no cost to the coffers - Restricted PSOs: lower cost than discounts	- Market rigidities and distortions - Reduce profitability and limit competition - Restricted PSOs: cost to the public coffers
Price regulation		Causes the most serious distortions and restrictions on competition: - Reduces efficiency, innovation and quality - Reduces profitability and disincentives competition - Difficult design
	Inconclusive proof of price containment	
Tax aid linked to travel	- Greater connectivity - Can encourage entry of competitors	- Fares increase, but less than with other measures - May be fiscally regressive
Direct transfers or unlinked tax aid	- No price distortion	- Does not improve connectivity - Regressive tax aid - Detrimental to the public coffers

Source: compiled by authors

As Table 6 shows, all possible support measures for connectivity have advantages and disadvantages.

Firstly, the main advantage of price discounts over other forms of support is that they reduce the final price of tickets for residents. However, their main drawback is that they stimulate demand to a greater extent than other forms of intervention. As a result, they lead to an increase in fares, which prevents residents from taking

full advantage of the measure and may crowd out non-resident passengers (who do not get the discount). Additionally, they can entail a considerable cost to public coffers. In turn, the different specific forms of designing discounts also have pros and cons:

- Establishing maximum amounts to be paid by residents guarantees affordable prices, but it makes demand from these passengers totally insensitive to price above the established price. This can cause fare increases to be particularly intense, and it can also function as a floor for them.
- Establishing a fixed subsidy per trip, on the other hand, has the advantage that it does not affect the price sensitivity of resident demand, and therefore does not have such a distorting effect on prices. However, like the previous subtype, it has the disadvantage that it can create a fare floor.
- Finally, percentage discounts have the advantage that they do not constitute a fare floor, but they do make resident demand more insensitive and therefore cause an increase in fares.

For their part, obligations governing frequency, capacity or other conditions (PSOs) ensure certain connectivity conditions, but they introduce distortions and rigidities which limit companies' flexibility to enter the market and adjust their supply, thereby reducing competition in the market. Furthermore, depending on the conditions of the PSOs, they may entail a cost to the public coffers.

Among the conditions that can be regulated by PSOs are pricing regulations. This type of intervention causes serious market distortions, reduces competition, innovation and quality, and is also difficult to design. In addition, evidence regarding its effectiveness in containing prices is inconclusive.

With regard to tax aid linked to travel, it serves to foster connectivity and may encourage competitors to enter the market, but as demand for travel increases, it also produces an increase in fares.

Finally, transfers and tax aid not linked to travel do not cause distortions in ticket prices. However, they are not a support measure for connectivity as such, but rather economic compensation for the fact of being outside the peninsula.

Lastly, it should be noted that all the above measures may be regressive, depending on how they are designed, particularly if they produce a situation in which the people who travel the most, and therefore receive most of the aid, are those with the highest income. Price discounts and tax aid, in particular, can have a greater regressive effect, depending on how they are designed.

4.4. International situation

Aid to air transport is very widespread internationally, through the implementation of different forms of support for connectivity. This aid is applied in a number of European Union Member States (following EU regulations¹³⁰) that have peripheral or remote territories, as well as in other countries where these circumstances are also found.

Some countries, like Spain, apply different forms of discounts on ticket prices for citizens as a way of achieving social and territorial cohesion. In addition, other measures, such as establishing public service obligations in island or peripheral regions, are widespread.

By way of illustration, the following cases are noteworthy among the countries that apply different forms of discount on airline ticket prices.

Portugal

In Portugal, ticket price measures are used as a means of achieving social and territorial cohesion and as compensation for the isolation of residents in the Azores and Madeira regions. The aid system was established in 1998 and has evolved as inefficiencies or improvements have been identified.

Initially, in the case of routes from the Azores region to/from Madeira and mainland Portugal, reference fares were established, as well as reduced fares for residents and students.¹³¹ In the case of peninsular routes to/from the Madeira region, a discount percentage on the resident and student fare was implemented, with a maximum eligible amount per ticket and a maximum value to be paid by these groups of passengers.¹³² This measure was implemented through the airlines or their agents, so that they deducted the amount of the subsidy from the fare. This regulation fell within the scope of a PSO.

In 2008, the Madeira system was modified, as it was considered to be too rigid and leave little room for competitive mechanisms. In particular, for the routes connecting mainland Portugal and Madeira, a new system of aid for residents and students called the Social Mobility Subsidy was introduced. This was a fixed-

¹³⁰ Set out in section 2.

¹³¹ Commission notice (98/C 267/04). Amendment of public service obligations imposed on certain scheduled air services within Portugal: Lisbon–Ponta Delgada–Lisbon, Lisbon–Terceira–Lisbon, Lisbon–Horta–Lisbon, Funchal–Ponta Delgada–Funchal, Porto–Ponta Delgada–Porto.

¹³² Commission notice (98/C 267/05). Amendment of public service obligations imposed on certain scheduled air services within Portugal: Lisbon–Funchal–Lisbon, Lisbon–Porto Santo–Lisbon, Porto–Funchal–Porto.

value subsidy per trip, which would be given provided that the fares were greater than that value, with the settlement being done directly by recipients, thus eliminating the airlines as intermediaries. In addition, this reform delinked the aid system for residents and students in Madeira from the PSOs, which were eliminated on these routes.¹³³

Finally, in 2015, the scheme was modified to standardise it on both Portuguese archipelagos, leaving it as follows.

The Social Mobility Subsidy benefits residents and students in both the Madeira and Azores regions, for routes connecting these regions with each other and with the rest of Portugal. In addition, it is a variable subsidy, covering the difference between the ticket price and the maximum value to be paid by the recipients. In the case of Madeira, in addition, a ceiling on the ticket price was introduced for the subsidy to be applicable.¹³⁴ Lastly, settlement for the aid continued to be done directly by the recipient.¹³⁵

Additionally, several PSOs were eliminated on routes linking the Azores to the peninsula, and the remaining four open PSOs in the archipelago were modified, establishing a maximum fare for residents and students. These routes are, at the end of 2019, the only open PSOs¹³⁶ connecting the island territories of Madeira and Azores with each other and with mainland Portugal.

There are another 16 routes with restricted PSOs,¹³⁷ 15 of which are inter-island,¹³⁸ where residents receive a preferential fare,¹³⁹ although they do not receive the Social Mobility Subsidy.

¹³³ Decree-Law 66/2008, of 9 April.

¹³⁴ In the Azores, there is no maximum value for application of the subsidy, but as will be seen later, in the PSO connecting this region with the rest of the country, there are maximum price conditions for residents and students.

¹³⁵ Decree-Law 134/2015.

¹³⁶ European Commission (2019).

¹³⁷ European Commission (2019)

¹³⁸ The nine Azores airports (which have restricted PSOs on routes linking them to each other, put out to tender in a single lot) operate as one, so that when flying to or from mainland Portugal or Madeira, connections made within a 24-hour period between the islands of the Azores archipelago are free for any passenger (routing service), according to information on the website www.azores.gov.pt.

¹³⁹ Commission notice (2007/C 24/05). Amendment of a public service obligation imposed on certain scheduled air services within Portugal.

Government Council Resolution No. 29/2015, of 12 February 2015, available at <http://www.azores.gov.pt/NR/rdonlyres/850E6A56-8C92-4FBC-8F43-876372CE6F00/1100941/OSPInterilhas1.pdf>

Table 7. Changes in connectivity measures in Madeira and the Azores

CHANGES IN CONNECTIVITY MEASURES					
Year	Azores– Peninsula	Azores– Madeira	Madeira–Peninsula	Azores Inter- island	Madeira Inter- island
1998	Reference fares (PSO) Reduced fares for residents and students (PSO) Settlement with airlines		Percentage discount for residents and students, with maximum limit and maximum amount for passengers (PSO) Settlement with airlines	¹⁴⁰ Concession until 2003, since then PSO	-
2008		-	Fixed discount (de-linked from PSO) Elimination of PSO Direct settlement with recipient	Maximum fares	Since 2007 PSO Maximum fares
2015	Discount based on maximum amount to be paid by residents and students, de-linked from PSO Elimination of several PSOs Azores–peninsula All others, PSO with maximum fares for residents and students		Discountable maximum price	Preferential fare for residents and students	Preferential fare for residents and students

Source: compiled by authors based on regulations.

France

France has a Territorial Continuity Assistance programme,¹⁴¹ whereby discounts are given to low-income residents of the outermost French territories¹⁴² for air travel to mainland France. The aim of this programme is to preserve family ties and promote cultural and economic relations. It is implemented through a fixed-amount discount voucher that each individual can use once every four years.

¹⁴⁰ Bråthen, 2016

¹⁴¹ L'Agence De l'Outre-mer pour la mobilité (LADOM). Available at <https://www.ladom.fr/voyage/dispositif-principal/le-dispositif-transport-classique/>

¹⁴² Residents of the overseas territories of Martinique, Guadeloupe, Saint Martin, Saint Barthélemy, French Guiana, Réunion and Mayotte.

In addition, in the case of the island of Corsica, a territorial continuity programme has been in place since 1979,¹⁴³ whereby maximum fares are established for residents of the island.

Additionally, France has 37 routes with PSOs.¹⁴⁴ These routes include those connecting to peripheral territories, such as Corsica and French Guiana, connections with developing regions, and low-traffic routes. There are both open PSOs (25% of the total) and restricted PSOs (75%).

The specific terms of the PSOs vary from route to route, and they may include maximum or preferential price conditions for residents, as well as financial compensation for airlines in the case of restricted PSOs.

Italy

In Italy, there is a territorial continuity system to promote cohesion between island regions and the peninsula, with a particular focus on the island of Sardinia. Although it is not strictly a partial airfare discount model for residents, as the system sets maximum fares, more advantageous conditions are applied for resident citizens.

On the island of Sardinia, there are maximum fares for residents of the island and the like,¹⁴⁵ as well as for non-residents, although the maximum fare of the latter is higher (double or triple that of residents, depending on the season).¹⁴⁶ The fare structure has been changed various times in terms of how non-residents are handled, taking forms such as an unregulated fare,¹⁴⁷ average reference fare

¹⁴³ Conseil Supérieur de l'Aviation Civile (2017).

¹⁴⁴ European Commission (2019)

¹⁴⁵ Disabled persons, students up to the age of 27, young people between the ages of 2 and 21, and people over the age of 70.

¹⁴⁶ Decree of 8 August 2018, Ministero delle Infrastrutture e dei Trasporti: Imposizione di oneri di servizio pubblico (OSP) sulle rotte Alghero - Roma Fiumicino e viceversa, Alghero - Milano Linate e viceversa, Cagliari - Roma Fiumicino e viceversa, Cagliari - Milano Linate e viceversa, Olbia - Roma Fiumicino e viceversa, Olbia - Milano Linate e viceversa.

¹⁴⁷ Decree of 5 August 2008. Ministero delle Infrastrutture e dei Trasporti. Imposizione di oneri di servizio pubblico sulle rotte Alghero- Roma Fiumicino e viceversa, Alghero-Milano Linate e viceversa, Cagliari-Roma Fiumicino e viceversa, Cagliari-Milano Linate e viceversa, Olbia-Roma Fiumicino e viceversa, Olbia- Milano Linate e viceversa.

combined with a maximum limit,¹⁴⁸ or maximum fare matching the resident fare.¹⁴⁹

There are other Italian island territories where maximum fares apply, such as on routes between the island of Elba and the mainland,¹⁵⁰ where there is a single maximum fare for residents and non-residents in the winter months and different maximum fares for residents and non-residents in summer.

Finally, these price conditions fall within the framework of PSOs. Italy has 11 routes with PSOs¹⁵¹ connecting peripheral Italian regions, such as Sardinia or the Pelagie Islands, with different Italian cities. Over time they have been implemented in different ways, through both restricted and open PSOs (in September 2019, 9 of the 11 routes subject to PSOs are restricted).

United Kingdom

The Scottish government has an Air Discounts Scheme, which provides a 50% discount on airfare¹⁵² for residents of certain peripheral regions, for journeys on covered routes.¹⁵³ However, the discounts do not apply to routes subject to PSOs or to travel for business purposes. As in Spain, resident passengers pay the ticket price with the discount already applied, and the airline then does a settlement for the discount with the government.¹⁵⁴

¹⁴⁸ Decree of 21 February 2013, Ministero delle Infrastrutture e dei Trasporti. Imposizione degli oneri di servizio pubblico sulle rotte Alghero-Roma Fiumicino e viceversa, Alghero-Milano Linate e viceversa, Cagliari-Roma Fiumicino e viceversa, Cagliari-Milano Linate e viceversa, Olbia-Roma Fiumicino e viceversa, Olbia-Milano Linate e viceversa.

¹⁴⁹ Decree of 23 March 2017. Ministero delle Infrastrutture e dei Trasporti. Imposizione di oneri di servizio pubblico sulle rotte Alghero-Roma Fiumicino e viceversa, Alghero- Milano Linate e viceversa, Cagliari-Roma Fiumicino e viceversa, Cagliari-Milano Linate e viceversa, Olbia-Roma Fiumicino e viceversa, Olbia-Milano Linate e viceversa.

¹⁵⁰ Decree of 27 February 2018, Amending decree n. 497 of 25 October 2017, establishing: 'Imposizione di oneri di servizio pubblico sulle rotte Elba Marina di Campo - Pisa e viceversa, Elba Marina di Campo - Firenze e viceversa, Elba Marina di Campo - Milano Linate e viceversa.'

¹⁵¹ European Commission (2019).

¹⁵² The part of the price subject to the discount is limited to the base fare, i.e. it does not include taxes, fees, or any other type of surcharge, according to the terms and conditions of the system set out on the official website of the programme: <http://www.airdiscountscheme.com/>

¹⁵³ The routes covered by the programme include routes between two airports in the eligible regions (outlying regions of the Highlands and Islands), as well as between an airport in an eligible region and any other in the European Economic Area.

¹⁵⁴ Information obtained from the Scottish Government website: <https://www.gov.scot/binaries/content/documents/govscot/publications/minutes/2018/11/air-dt-highlands-and-islands-working-group-papers-october-2018/documents/paper-3---air->

In addition, there are 22 routes in the UK, mainly between the islands, which have maximum price conditions and, in some cases, preferential fares for residents. These measures fall within the framework of PSOs,¹⁵⁵ which are all restricted, and include compensation for airlines offering the services.

In addition, the British government provides aid to airlines for starting up routes connecting to regional airports.¹⁵⁶ Requirements for this support include that the route is subject to a PSO, or that it connects with regional airports with annual traffic of fewer than 5 million passengers per year.

Australia

Air connectivity support policies include subsidies for residents¹⁵⁷ in regional and remote areas of Queensland, consisting of a discount of up to €400 per return trip between the airports included in the programme, which each resident can receive up to 12 times a year. In addition, Australia has implemented other measures to support air connectivity, such as public service obligations on routes to/from remote and sparsely populated communities, reserved slots at certain congested airports for lines connecting with specific regions, subsidies for air transport services in remote areas, and aid for airport investment.¹⁵⁸

Ecuador

A fixed fare applies to Galapagos Island residents on air journeys between these islands and mainland Ecuador. In addition, airlines are required to reserve 15 seats on each flight for residents.¹⁵⁹

[discount-scheme---public-service-obligations/paper-3---air-discount-scheme---public-service-obligations/govscot%3Adocument?forceDownload=true](https://www.gov.scot/publications/discount-scheme---public-service-obligations/paper-3---air-discount-scheme---public-service-obligations/govscot%3Adocument?forceDownload=true)

155 European Commission (2019).

156 International Transport Forum (2017).

157 Department of Transport and Main Roads of the Queensland Government. Local Fare Scheme – Airfare subsidy for regional and remote Queensland (03/01/2019). Retrieved from <https://www.tmr.qld.gov.au/Travel-and-transport/Local-Fare-Scheme-Far-North-Queensland.aspx>

158 International Transport Forum (2018).

159 Resolution 13/2014 of the Consejo Nacional Aviación Civil de Ecuador. Fee for permanent and temporary residents of the province of Galapagos.

Table 8. Countries with aid schemes for connectivity based on discounted airline ticket prices*

CONNECTIVITY SUPPORT MEASURES IMPLEMENTED BY DIFFERENT COUNTRIES	
Country	Measures
Portugal	Different types of aid since 1998 on routes with the Azores and Madeira: • PSOs • Reference, maximum and preferential fares for residents and students • Fixed-value discounts for residents, maximum amount paid
France	• PSOs on routes to/from peripheral, developing or low-traffic territories On routes between the outermost territories and mainland France: • Fixed discount for low-income residents (once every four years) Corsica: • Maximum fares for residents
Italy	Island regions (especially Sardinia): • PSOs • Maximum fares (special for residents) • Reference fares with maximum limits
United Kingdom	• PSOs on some routes with maximum and preferential prices for residents • Aid for starting up routes to/from regional airports In Scotland: • Discount for residents in some regions and routes
Australia	In remote regional areas: • Subsidies for residents with a maximum eligible amount, up to 12 times a year • PSOs • Slot reservations • Investment aid
Ecuador	On routes between the Galapagos Islands and mainland Ecuador: • Fixed rate for residents • Seats reserved for residents

Source: compiled by authors based on regulations.

*The countries presented in this section are a sample of those that have implemented some kind of discount on air ticket prices, but this is not an exhaustive list.

5. CIRCUMSTANTIAL ANALYSIS OF THE EFFECTS OF MEASURES IN SPAIN

This section presents the results of the analysis carried out by the CNMC on the effects of the increase in the airfare discount for residents of the Balearic and Canary Islands to 75% of the fares and prices actually paid by recipients, as well as other demand and supply variables.

For this purpose, data provided by the DGAC already used in the economic description were used, as well as data provided by the main airlines¹⁶⁰ on number of passengers transported in each aggregate set of routes. Unlike the economic description section, in this case, the data are analysed with a higher time frequency (monthly) and focusing on the last four years (2016, 2017, 2018 and 2019), so that the effect following the change in the fare discount for residents from 50% to 75% is captured and compared with other periods in which that shock did not occur (reference years).

The study is conducted for each group of routes, like the economic description in section 3. Although the CNMC has data on the main individual routes within each group (which have also been analysed), given that they developed similarly to the aggregates, information is not presented for each of these individual routes. The available data do not allow us to study the variables on smaller routes¹⁶¹, so they may have developed differently. Nonetheless, the conclusions obtained about the increase in the discount will be robust, as they are derived from the aggregate data and having been compared to variation in the routes where the highest passenger traffic is concentrated.

For this analysis, in the case of inter-island routes, data have been obtained from the DGAC, since this body has information on both resident travellers (obtained from settlement of resident discounts) and non-resident travellers (to monitor compliance with the terms of the PSO). Since the DGAC does not have data on non-residents for the island–peninsula routes, a request was submitted to the largest airlines for the densest routes between the archipelagos and the peninsula to obtain these.¹⁶² In the latter case, since it does not represent the

¹⁶⁰ The airlines from which information was requested are Iberia Express, Air Europa, Ryanair and Vueling, which carry 95% and 86% of passengers on the densest routes (with more than 500,000 passengers a year on commercial flights) connecting the peninsula with the Balearic Islands and the Canary Islands, respectively.

¹⁶¹ Data are available for the most important routes (in number of passengers), as well as aggregate average data.

¹⁶² Iberia Express, Air Europa, Ryanair and Vueling carry 95% and 86% of passengers on the densest routes (with more than 500,000 passengers a year on commercial flights) connecting the peninsula with the Balearic Islands and the Canary Islands, respectively.

total market, the information should be taken with caution, although it can be used as an approximation.

Finally, it is necessary to emphasise that the analysis conducted is not capable of establishing causality, since the impact of other factors that may affect the variation in the variables analysed is not taken into account, so it cannot be concluded with certainty that said variation is a direct consequence of the change in the discount percentage. However, thanks to the evidence obtained from the analysis presented below, it is possible to identify the breaks in the trend following the shock and to draw circumstantial conclusions regarding its effects.

5.1. Routes between the Balearic Islands and the peninsula

The 75% increase in the discount in July 2018 was accompanied by a significant rise in average airfares for tickets purchased by passengers relative to their variation over the previous two years, **suggesting that** on routes between the Balearic Islands and the peninsula, **the discount may have shifted to prices.**

This conclusion can be drawn from Figure 43: the left-hand panel shows the average fares in absolute values, while on the right they are presented as index numbers,¹⁶³ taking as the reference (100) June of each year, since it was in July that the discount percentage increased. Although during the first half of 2018, the average fare behaved similarly to that of other years,¹⁶⁴ from July onwards, it rose much more than usual, a difference that widens over the months, with the average fare growing 9% over previous years in August and reaching a difference of 22% in December.¹⁶⁵ In 2019, the level of the actual average fare (in euros) was, on average, higher than previous years (Panel 43.1), indicating that the increase in the average fare for tickets purchased by all passengers continued to occur.

¹⁶³ The use of index numbers allows us to isolate the effects of factors outside the study, which may affect behaviour in different financial years.

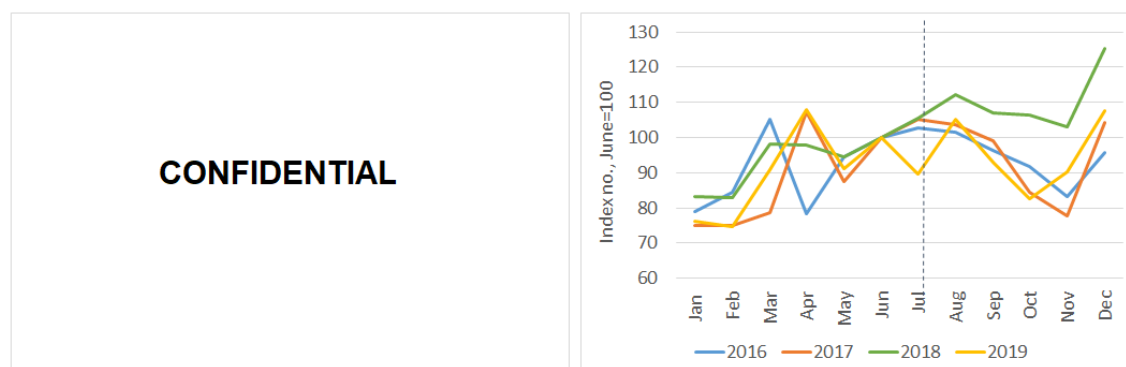
¹⁶⁴ The graph shows a spike in fares between February and May, which correspond to Holy Week, depending on the date it was celebrated each year.

¹⁶⁵ This break in the trend can be seen in the index numbers panel, in the divergence, starting in June, between the green line (2018) and the other three (2016, 2017 and 2019).

Figure 43. Variation in average fares for tickets purchased by all passengers on Balearic Islands–peninsula routes (2016–2019).

Panel 43.1 Fare (euros)

Panel 43.2 Fare (index numbers)



Source: compiled by authors from data provided by Iberia Express, Air Europa, Ryanair and Vueling.

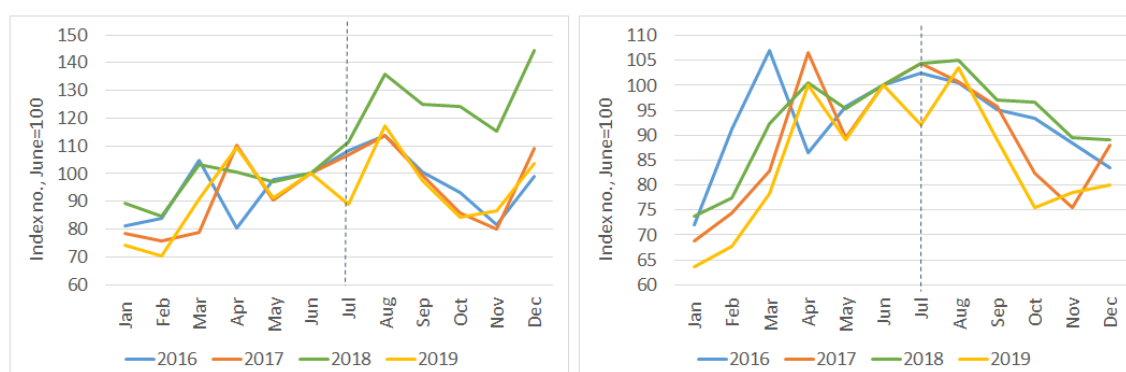
Note: the dashed line marks when the discount percentage increased from 50% to 75%.

If we distinguish between resident and non-resident passengers, we see that the increase in average airfares occurred mainly in the case of tickets purchased by resident passengers, growing by 40% over the reference years (Figure 44), while for non-residents, the growth in average airfare was 7% higher than in other years.

Figure 44. Variation in average fares for tickets purchased by resident and non-resident passengers on Balearic Islands–peninsula routes, in index numbers (2016–2019).

Panel 44.1 Resident passengers

Panel 44.2 Non-resident passengers



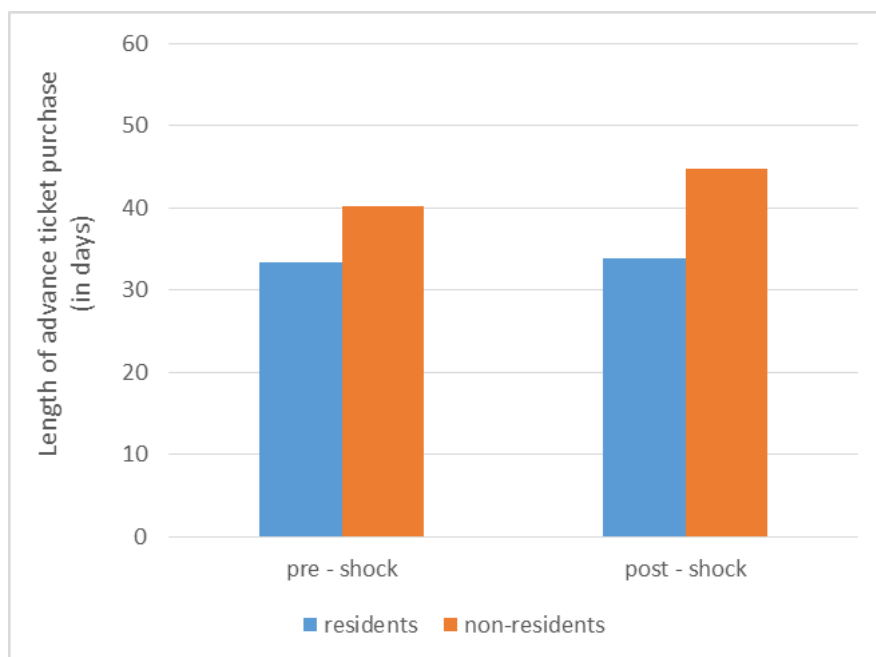
Source: compiled by authors from data provided by Iberia Express, Air Europa, Ryanair and Vueling.

Note: the dashed line marks when the discount percentage increased from 50% to 75%.

This difference in the average fare for tickets purchased by residents and non-residents may be due to the different buying pattern of the two types of travellers. Before the shock, residents bought tickets with 10% higher average fares than non-residents, a difference that widens (after the discount increase) to 40%.

In this regard, according to data provided by the airlines, on average, non-resident passengers bought their tickets seven more days in advance than resident passengers before the shock.¹⁶⁶ The difference in behaviour was accentuated after the increase in the discount percentage, reaching 11 days (which means that the gap between the length of advance ticket purchase for non-residents versus residents increased by 60%, as non-residents made their ticket purchases earlier while residents remained virtually constant).

Figure 45. Length of advance ticket purchase by resident and non-resident passengers on Balearic Islands–peninsula routes, before and after the shock.



Source: compiled by authors from data provided by Iberia Express, Air Europa, Ryanair and Vueling.

¹⁶⁶ For this analysis, January 2016 to June 2018 was considered the period before the shock, and July 2018 to December 2019 the period after the shock.

This change in behaviour by certain passengers may have been brought on by the increase in the discount: since the actual average fare is higher, non-residents may be trying to get tickets at cheaper fares by making their purchases earlier. Residents, on the other hand, either because of the nature of their travel, or because they are less price sensitive due to the discount, would not have as much incentive to make their purchase earlier, leading them to purchase tickets with higher actual fares.

In line with this argument, if airlines were able to detect consumers' usual buying patterns, their optimal business strategy to maximise profits would be to adjust their supply according to the characteristics of demand at any given time. Thus, if they determine that consumers who purchase tickets a certain period in advance or flights at a certain time are more willing to pay (as will be the case of residents, as they receive a 75% discount on the fare), they will have incentives to offer higher fares for those flights and that period and thus pocket higher revenues (in the case of residents, part of the discount), without this necessarily meaning there is discrimination on geographical grounds.

Also, data collected by the CNMC show that non-residents must have changed their buying pattern in terms of the type of airline tickets chosen (for those with fewer features), or in terms of the type of airline they fly with, choosing low-cost airlines to a greater extent.

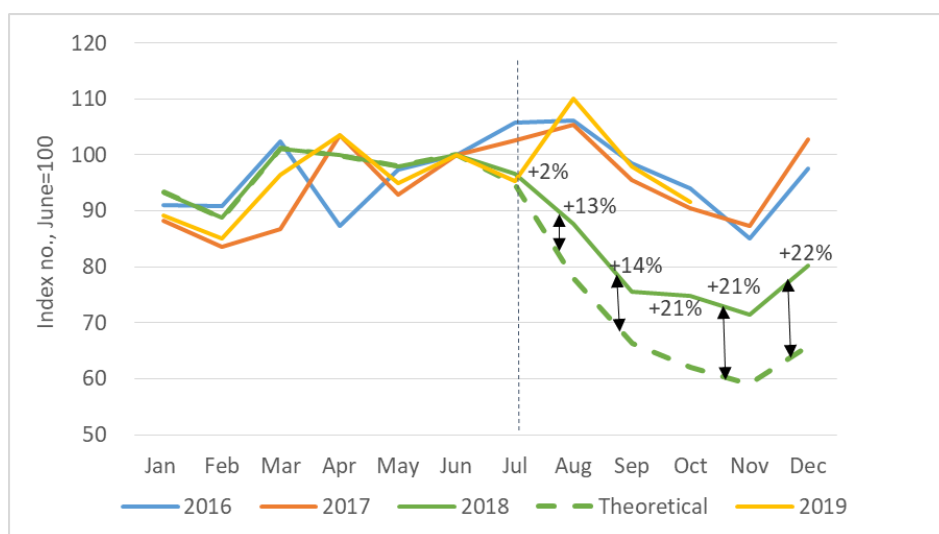
In contrast, **the actual average price** paid by residents (i.e. the average fare after the discount plus non-discountable fees) during the second half of 2018 **was lower** compared to the reference periods, meaning that the measure reduced the final average cost of their tickets, **but less than might have been expected** in the absence of any shift effect from the discount.

For this comparison, the CNMC estimated a theoretical average price, defined as the price that residents would have paid if the average fare for their tickets had changed within the year at the same rate as in previous years (2016 and 2017). That is, assuming the rest of the factors remain constant, the average fare that would have existed if the shift had not occurred.¹⁶⁷ The comparison between the two (Figure 46) shows that, in July, the actual average price was 2% higher than the theoretical price (green dashed line), a difference that expands progressively, so that in October it was 21% higher, maintaining the same distance after that.

¹⁶⁷ The method of calculating the theoretical average price, for example, in August 2018, is as follows: in August 2016 and 2017, average airfare was, on average, 9% higher than in June. To calculate the theoretical average price that residents would have paid in August 2018, the value of the average airfare for June 2018 is increased by 9%. The discount percentage applied is then deducted, and the value of the non-discounted fees is added.

In other words, the sharp increase in fares immediately following the increase in the discount prevented final resident prices from falling as much as they might have fallen in the absence of any shift effect, thus preventing residents from fully benefiting from the measure.

Figure 46. Actual price paid by residents on Balearic Islands–peninsula routes (2016–2019) and comparison with the theoretical price in 2018. Index numbers.



Source: compiled by authors from data provided by the DGAC.

Note: the dashed grey line marks when the discount percentage increased from 50% to 75%.

It is also necessary to take into account variation in demand and supply, as well as to consider various factors that may have had an impact on average fares.

After the shock, the variation in demand by residents shows a deviation from its normal variation in other periods (Figure 47, left-hand panel), growing 10% more than in previous years, on average, in the second half of the year.¹⁶⁸ It is evident here that the increase in the **discount** may have been one of the causes of this **boost in demand from residents** of the Balearic Islands, as tickets for flights to/from the peninsula became cheaper.

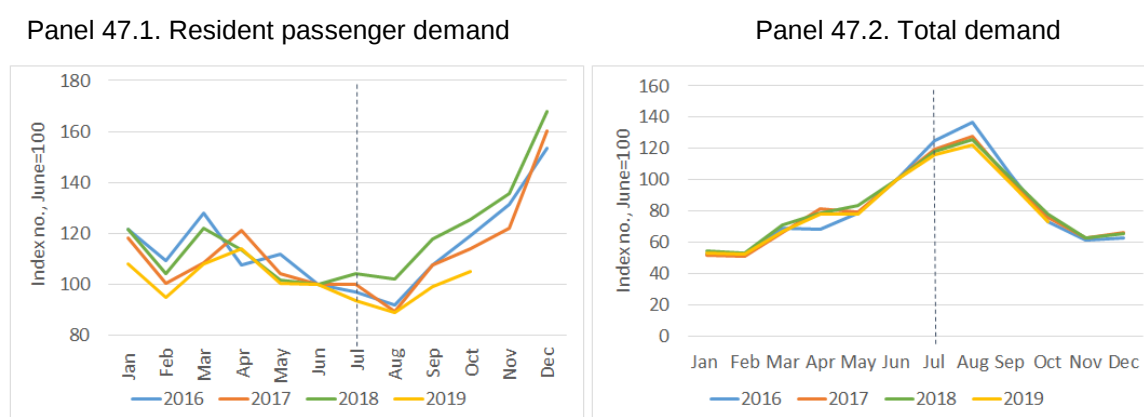
Demand from non-residents, however, does not show significant differences after the shock, meaning that **there was no crowding-out of non-resident** passengers. This, together with the relatively low proportion of resident passengers, which remains around 35%, explains why overall variation in total

¹⁶⁸ This can be seen in panel 46.1, as the separation between the green line (corresponding to 2018), and the other three (corresponding to 2016, 2017 and 2019), starting in July.

demand (Figure 47, right-hand panel) was not affected following the increase in the discount percentage.¹⁶⁹

The increase in the average fare (especially for tickets purchased by residents) may have been influenced by the **reduction in the price elasticity of resident demand** resulting from the increase in the discount percentage (an effect explained in section 4.1.1).

Figure 47. Variation in demand on Balearic Islands–peninsula routes (2016–2019). Index numbers.



Source: compiled by authors from data provided by the DGAC.

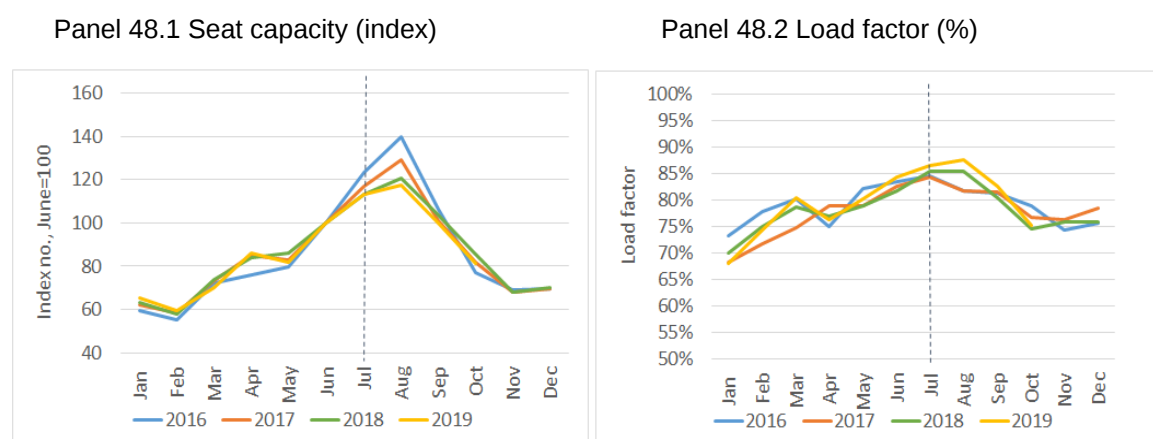
Note: the dashed line marks when the discount percentage increased from 50% to 75%.

On the supply side (Figure 48), there are no significant differences in variation in the second half of 2018, beyond the months of July and August, when seat capacity grew somewhat less than in previous years, and the load factor was somewhat higher. After that, however, the difference from previous financial years disappears.

In addition, as seen in section 3.1.2., the number of operators remained unchanged during the second half of 2018, with seven competitors on these air routes. Therefore, **the rise in average prices does not correspond to a decrease in seat capacity or a decrease in the number of competitors** in the market.

¹⁶⁹ As seen in panel 46.2, the green line (2018), remains very close to the blue, orange and yellow lines (2016, 2017 and 2019, respectively).

Figure 48. Variation in supply on Balearic Islands–peninsula routes (2016–2019).



Source: compiled by authors from data provided by the DGAC.

Note: the dashed line marks when the discount percentage increased from 50% to 75%.

It would be possible to assess whether the increase in average fares starting in the second half of 2018 was affected by supply-side elements, such as an increase in costs. One of the main factors that can influence short-term variation in airline costs is **fuel price**. Between January and June 2018, the price of aviation fuel rose 12%,¹⁷⁰ but after that, it fell by 17% until December. Assuming that airlines cover themselves against price fluctuations by entering into futures contracts for their fuel supply,¹⁷¹ it would be possible for the increase in fuel costs during the first half of the year to have an impact on airfares in the second half of the year. However, the cost of fuel represents approximately 24% of total airline costs, thus the 12% increase in fuel prices between January and June 2018 does not seem, by itself, capable of explaining the significant increase in average airfares on routes between the peninsula and the Balearic Islands between June and December.

On the other hand, one factor that could influence the increase in fares is the **ability of airlines to adapt supply** to demand, at least for certain times or specific days. As figures 8 and 48 show, supply adapts, a priori correctly, to demand, and the load factor in the second half of 2018 is at the same levels as previous years. However, this analysis is not able to distinguish between data according to day or time, so supply may have a problem adapting at the times of highest demand, such as weekends. In this regard, the International Air Transport Association (IATA) classifies airports according to capacity at different levels. According to

¹⁷⁰ Information obtained from data from the International Energy Agency (U.S. Gulf Coast Kerosene-Type Jet Fuel Spot Price) and Eurostat (average monthly US dollar–euro exchange rate).

¹⁷¹ IATA (2018)

the latest classification,¹⁷² most of the major Spanish airports,¹⁷³ including the airports in the Balearic archipelago, as well as others with which the island routes connect, have congestion problems, at least for some periods of the day, week or season. This may explain why, in response to the challenge of increasing supply, prices shoot up for some flights, thereby increasing average fares. Also, even if there are no congestion problems, airlines may have operational difficulties that prevent their supply from adapting immediately or easily, especially when it comes to point-in-time spikes in demand for certain times, days of the week or seasons.

The variation in airfares on Balearic Islands–peninsula routes following the increase in the discount percentage could therefore be a reflection of a shift of the discount increase to prices, triggered by the increase in resident demand, as well as the decline in elasticity, which becomes an incentive for airlines to offer higher fares without being harmed by a drop in resident (not very price sensitive) or non-resident (having changed their consumption patterns) demand, and possible problems in adapting the supply, at least at certain times of the day or week.

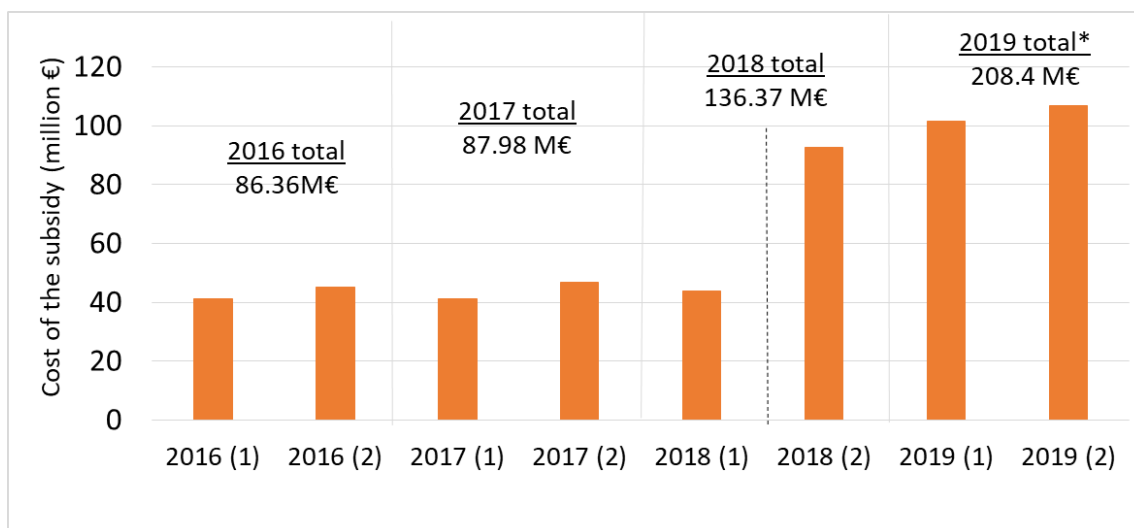
Finally, it should be noted that during the second half of 2018, the **cost to the State coffers** of the discount on air journeys in the Balearic archipelago and the peninsula **increased by 98%** over the same period of the previous year. In 2019, the cost continued to rise, having increased by more than 130% between the first half of 2018 and the same period in 2019.

From the preceding analysis, it can be concluded that this increase is partly due to a rise in resident demand, but above all to the increase in the actual average fare.

¹⁷² <https://www.iata.org/policy/slots/Pages/slot-guidelines.aspx>

¹⁷³ In the Canary and Balearic archipelagos, the Palma de Mallorca, Menorca, Ibiza, Gran Canaria, Tenerife Norte, Tenerife Sur, Fuerteventura, La Palma and Lanzarote airports; and on the peninsula, the Adolfo Suárez-Madrid Barajas, Josep Tarradellas Barcelona-El Prat, Málaga-Costa del Sol, Alicante-Elche, Almería, Asturias, Bilbao, Aeropuerto Internacional Región de Murcia, Girona-Costa Brava, F.G.L. Granada-Jaén, Jerez, A Coruña, Pamplona, Reus, San Sebastián, Santander-Seve Ballesteros, Sevilla and Valencia airports.

Figure 49. Variation in the cost of the subsidy for Balearic Islands–peninsula routes (2016–2019)



Source: compiled by authors from data provided by the DGAC.

Notes: * As information for November and December 2019 is not available, the cost data for the second half of the year and total for the year have been estimated assuming the same variation as the previous year.

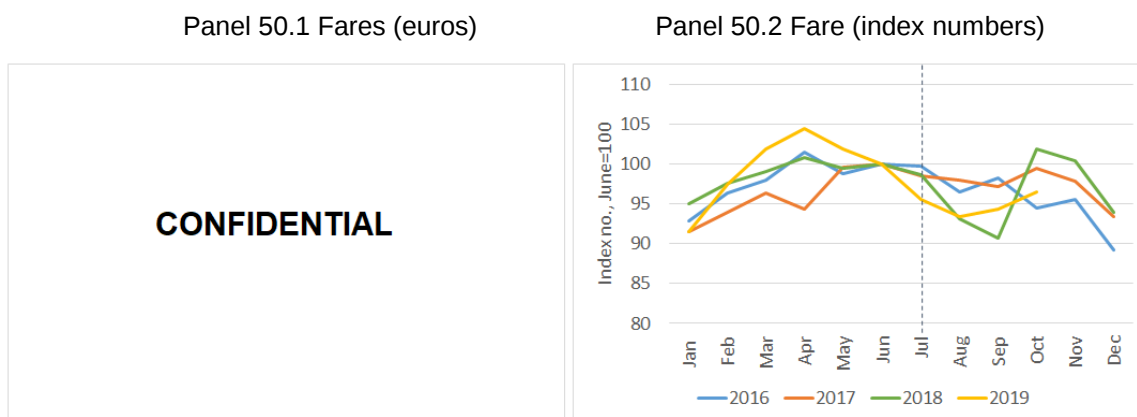
The dashed line indicates when the discount percentage increased from 50% to 75% in each of the aggregate groups.

5.2. Inter-island routes in the Balearic Islands

In the case of inter-island routes, the result is different from that obtained for routes to/from the peninsula. **There does not appear to have been any significant break** in the trend of actual average fares for tickets purchased by all passengers after July 2017, when the discount was increased to 75% (Figure 50), although in this case, they do not vary following the same pattern within the year

over different years. This would seem to indicate that **there must have been no shift from subsidy to fare.**

Figure 50. Variation in average fares for tickets purchased by all passengers on inter-island routes in the Balearic Islands (2016–2019).

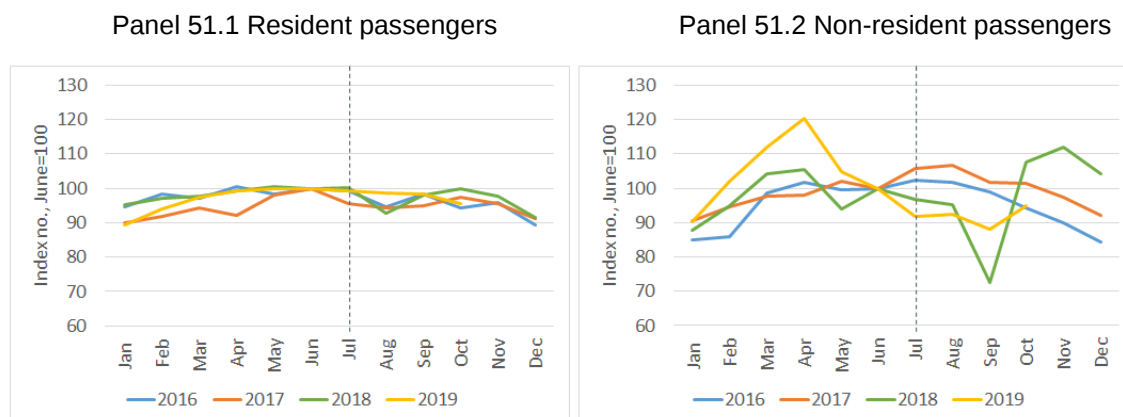


Source: compiled by authors from data provided by the DGAC.

Note: the dashed line marks when the discount percentage increased from 50% to 75%.

If a distinction is made between resident passengers and non-resident passengers, no different behaviour is observed in the variation in average fares for tickets purchased by the two types of passengers (Figure 51). Between 2016 and 2019, on average, residents bought tickets at 12% higher fares than tickets purchased by non-residents, but this difference remains stable after the shock. The difference between the average fares for tickets purchased by the two types of travellers may be due to different buying patterns between the two types of consumers.

Figure 51. Variation in average fares for tickets purchased by resident and non-resident passengers on inter-island routes in the Balearic Islands, in index numbers (2016–2019).



Source: compiled by authors from data provided by the DGAC.

Note: the dashed line marks when the discount percentage increased from 50% to 75%.

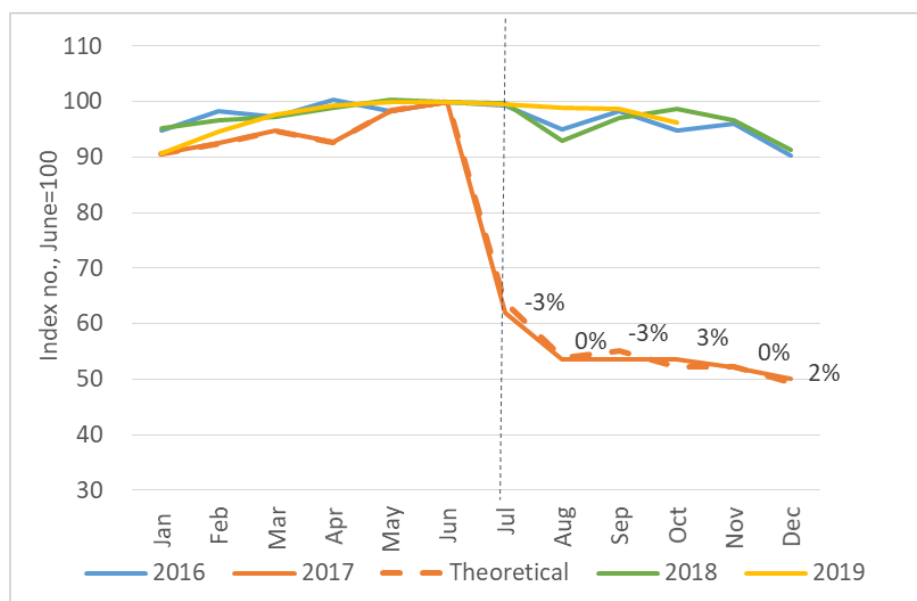
One might think that the reason for this different impact lies in the fact that on inter-island routes, there are **PSOs** that limit the average fare by means of the reference fare, so that airlines have no margin to raise their fares. However, as considered in the economic description (Figure 19, section 3.2.3.), **actual average fares** are, in practice, **far from the reference fare** imposed by the regulation, meaning that this argument would not be valid.

On inter-island routes in the Balearic Islands, the **increase in the subsidy has been effective** in reducing the cost of travel for residents. The actual average price paid by residents after the shock fell sharply¹⁷⁴ and on average, it was 44% lower than the previous year (Figure 52). This drop is almost identical to theoretical variation,¹⁷⁵ given that the average fare did not increase, so that the reduction in ticket price for residents on these routes reached the expected scale.

¹⁷⁴ On the Balearic Islands inter-island routes, the discount percentage for residents increased to 75% in July 2017, with the increase in the actual percentage coming very quickly, so that in July of that year, it was 69% and by August it was already 74%, which explains why the drop in the average price is not gradual, as was the case on Balearic Islands–peninsula routes.

¹⁷⁵ The theoretical price was estimated according to the methodology set out in section 5.1.

Figure 52. Actual average price paid by residents on inter-island routes in the Balearic Islands (2016–2019) and comparison with the theoretical price in 2017. Index numbers.



Source: compiled by authors from data provided by the DGAC.

Note: the grey dashed line marks when the discount percentage increased from 50% to 75%.

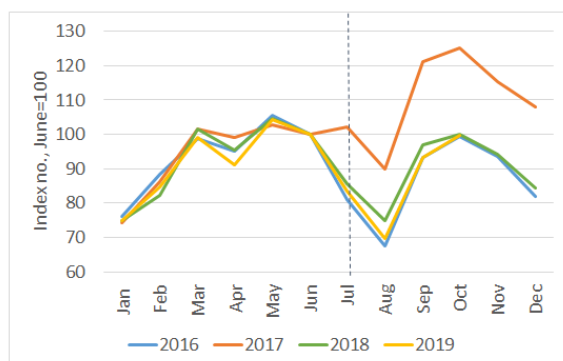
The increase in the discount in July 2017 was accompanied by a **strong impact on demand from resident passengers** (Figure 53, left-hand panel), which was 26% higher than in other periods. This boost in resident demand continued after that, throughout 2018 and 2019.¹⁷⁶

In addition, the variation in demand from non-residents has not shown significant differences since the shock, that is, **there has been no crowding-out effect of non-residents**. This, together with the fact that on Balearic Islands inter-island routes, the percentage of residents out of total demand was on average more than 75% between 2016 and 2019, and, in addition, their share increased as a result of the shock (from 73% before the increase in the discount percentage to 77% afterwards), caused total demand (Figure 53, right-hand panel) to experience a similar jump in trend to that of resident passengers. Specifically, between June and December 2017, total demand grew, on average, 15% more than in the reference years.

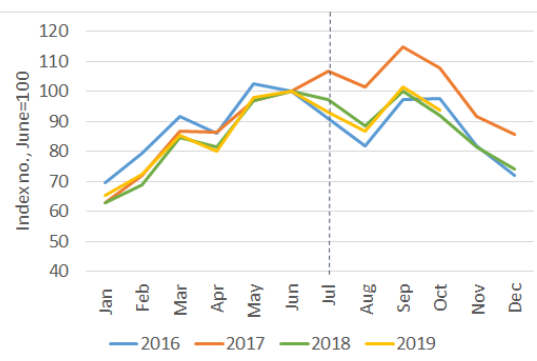
¹⁷⁶ The graph does not reflect this increase in demand in 2018 and 2019, because there were steady increases throughout the year, and this graph shows variation in index numbers, compared to June of each year.

Figure 53. Variation in demand on inter-island routes in the Balearic Islands (2016–2019).
Index numbers.

Panel 53.1. Resident passenger demand



Panel 53.2. Total demand



Source: compiled by authors from data provided by the DGAC.

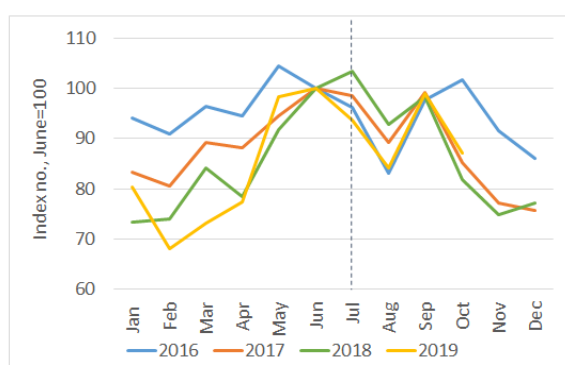
Note: the dashed line marks when the discount percentage increased from 50% to 75%.

As regards supply, the shock of the discount was not followed by growth in seat capacity. Instead, **supply adjusted to the increase in demand via** an increase in the **load factor** (Figure 54).

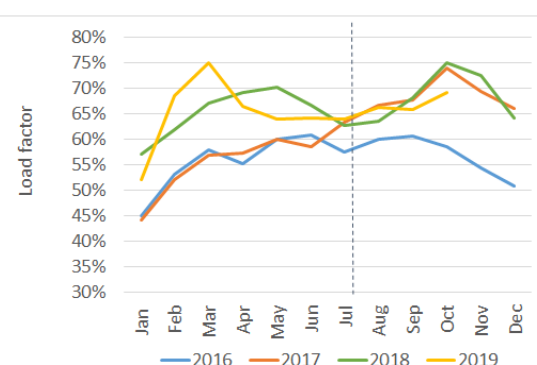
Additionally, Air Berlin's withdrawal from these routes in 2016 reduced the number of operators from three to two between the second half of 2016 and the same period in 2017.

Figure 54. Variation in supply on inter-island routes in the Balearic Islands (2016–2019).

Panel 54.1 Seat capacity (index)



Panel 54.2 Load factor (%)



Source: compiled by authors from data provided by the DGAC.

Note: the dashed line marks when the discount percentage increased from 50% to 75%.

In short, unlike what appears to have happened on routes to/from the peninsula, there was no fare increase on inter-island routes, despite the increase in resident

demand (and total demand) and their lower price sensitivity, with airlines adjusting to increased demand via higher flight occupancy.

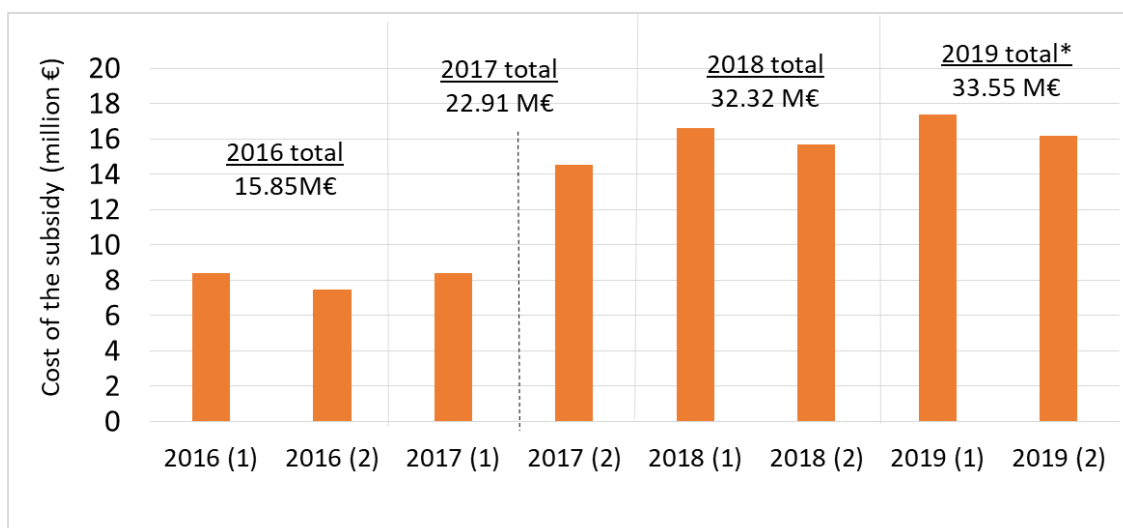
This different reaction by airlines on routes to/from the peninsula and inter-island routes may be due to the fact that inter-island routes have greater margin to increase supply via their load factor, given that it is much lower (62% on average between 2016 and 2019) than on routes to/from the peninsula (79% on average between 2016 and 2019). This lower load factor on inter-island routes may be due to the fact that the existing PSOs on inter-island routes set maximum limits on this variable which, if exceeded, entail additional obligations for airlines.

Another possible explanatory factor could be the change in **fuel price, although it does not appear to apply in this case**. During the first half of 2017, the price of fuel fell by 14%, which could have offset the impact of increased demand on prices to some extent in the second half of the year.¹⁷⁷ However, average airfares remained stable throughout 2018, even though fuel prices were up 45% in June of that year compared to June 2017.

Finally, it should also be noted that the **cost** of this measure for all Spanish citizens and taxpayers **doubled** after the percentage of the subsidy was set at 75% of the fare. In the case of Balearic Islands inter-island routes, the increase in cost is entirely due to the larger number of resident passengers travelling.

¹⁷⁷ Considering that airlines close fuel supply contracts on the futures market a few months in advance.

Figure 55. Variation in the cost of the subsidy for inter-island routes in the Balearic Islands (2016–2019)



Source: compiled by authors from data provided by the DGAC.

Notes: * As information for November and December 2019 is not available, the cost data for the second half of the year and total for the year have been estimated assuming the same variation as the previous year.

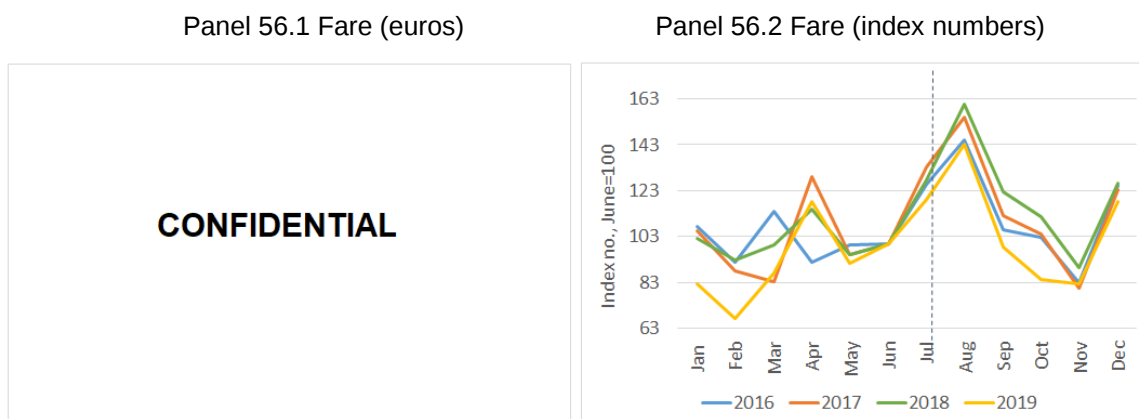
The dashed line indicates when the discount percentage increased from 50% to 75% in each of the aggregate groups.

5.3. Routes between the Canary Islands and the peninsula

The **outcome** for routes between the peninsula and the Canary Islands is **similar to the situation with the Balearic Islands**, although with some distinguishing aspects.

After the shock in July 2018, average fares for tickets purchased by all passengers were on average 9% higher than in reference years (Figure 56), suggesting that a **shift of the discount to fares** probably occurred. In 2019, the average price level was higher than in previous years (panel 56.1), which seems to indicate that the increase in the average fare was not temporary.

Figure 56. Variation in average fares for tickets purchased by all passengers on Canary Islands–peninsula routes (2016–2019).

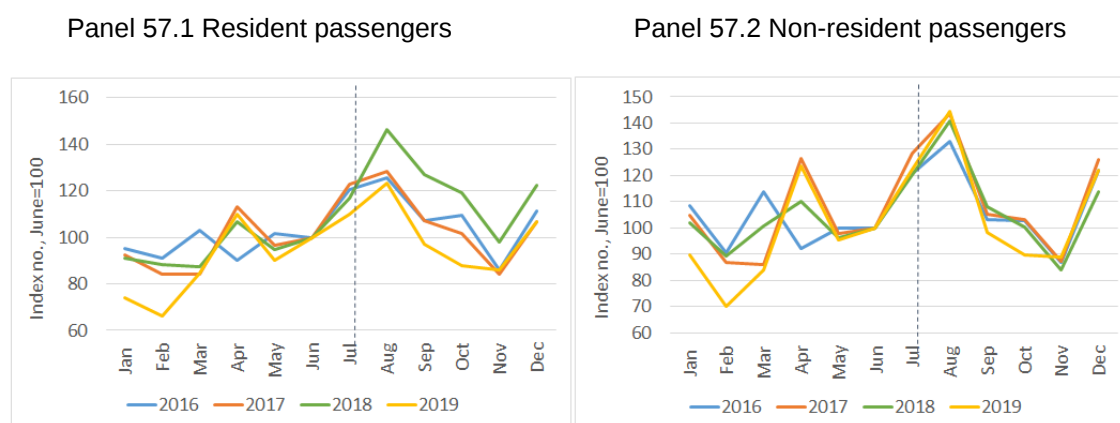


Source: compiled by authors from data provided by Iberia Express, Air Europa, Ryanair and Vueling.

Note: the dashed line marks when the discount percentage increased from 50% to 75%.

If we distinguish between resident and non-resident passengers, we can see that the increase in actual average airfares occurred in the case of tickets purchased by resident passengers, trending, on average, 17% above the reference years (Figure 57.1), while no change is seen in the actual average fares for tickets purchased by non-residents.

Figure 57. Variation in average fares for tickets purchased by resident and non-resident passengers on Canary Islands–peninsula routes, in index numbers (2016–2019).

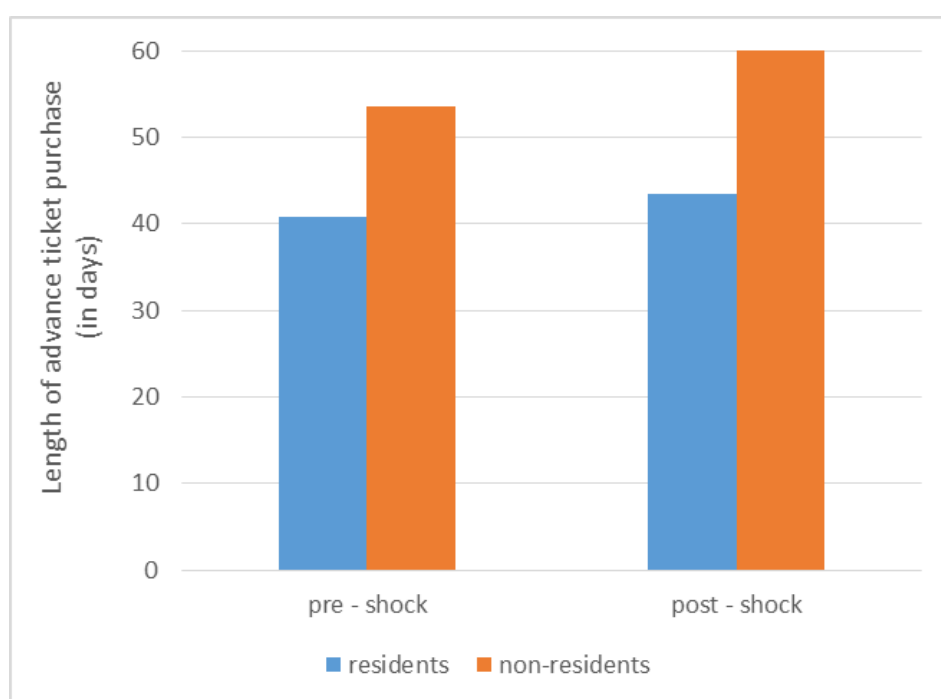


Source: compiled by authors from data provided by Iberia Express, Air Europa, Ryanair and Vueling.

Note: the dashed line marks when the discount percentage increased from 50% to 75%.

Before the shock,¹⁷⁸ residents were already buying tickets with fares 19% higher than non-residents, and this difference widened (after the discount increased) to 50%. This difference in trend may be due to the different buying pattern of the two types of travellers. Due to different reasons for travelling, resident travellers may have different patterns of behaviour in terms of preferred times or days, or length of advance ticket purchase, among other things. For example, just as in the Balearic Islands, non-resident passengers bought their tickets, on average, 13 days earlier than residents before the shock, and after the increase in the discount percentage, the gap in their behaviour widened to 18 days (the difference between the length of advance ticket purchase for non-residents versus residents increased by 40%, as non-residents made their ticket purchases earlier to a greater extent than residents).

Figure 58. Length of advance ticket purchase by resident and non-resident passengers on Canary Islands–peninsula routes, before and after the shock.



Source: compiled by authors from data provided by Iberia Express, Air Europa, Ryanair and Vueling.

¹⁷⁸ For this analysis, January 2016 to June 2018 was considered the period before the shock, and July 2018 to December 2019 the period after the shock.

The change in behaviour of both groups of passengers may be influenced by the increase in the discount: non-residents may be trying to get cheaper tickets by making their purchases earlier, while resident passengers, given their lower price elasticity, would not have as much incentive to do so, leading them to purchase tickets at higher actual fares.

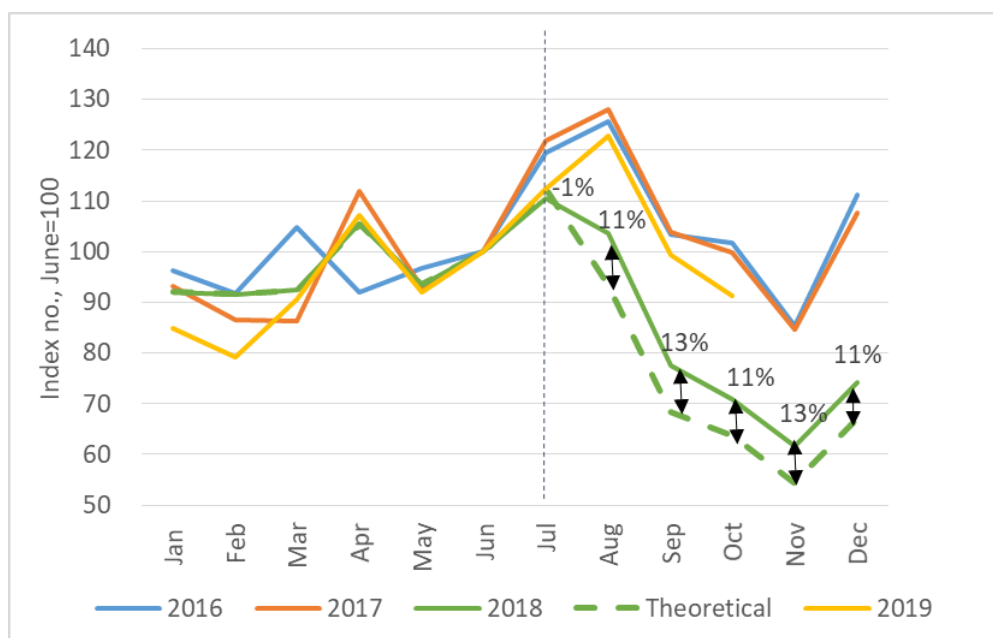
In line with this argument, if airlines were able to detect consumers' usual buying patterns, their optimal business strategy to maximise profits would be to adjust their supply according to the characteristics of demand at any given time. Thus, if they determine that consumers who purchase tickets a certain period in advance or flights at a certain time are more willing to pay (as will be the case of residents, as they receive a 75% discount on the fare), they will have incentives to offer higher fares for those flights and that period and thus pocket higher revenues (in the case of residents, part of the discount), without this necessarily meaning there is discrimination on geographical grounds.

Other behavioural changes appear to be taking place that could explain differences in average fares for tickets purchased by certain passengers, according to data collected by the CNMC. In particular, there are indications that in response to an increase in fares, non-resident travellers decide to change the type of airlines they fly to low-cost airlines to a greater extent than before.

Once the new discount percentage was applied, the **actual average prices** paid by residents **fell**, but **less** than might have been expected, had there been no shift effect from the discount increase to fares. Specifically, they are on average 12% higher than theoretical average prices¹⁷⁹ (Figure 59). The evidence therefore suggests that average fares for air tickets purchased by residents increased on Canary Islands–peninsula routes as a result of the increase in the discount to 75%. But this appears to have occurred to a lesser extent than in the case of the Balearic Islands.

¹⁷⁹ The theoretical price has been estimated according to the methodology set out in section 5.1.

Figure 59. Actual average price paid by residents on Canary Islands–peninsula routes (2016–2019) and comparison with the theoretical average price in 2018. Index numbers.



Source: compiled by authors from data provided by the DGAC.

Note: the dashed grey line marks when the discount percentage increased from 50% to 75%.

Also in this case, **demand from resident** passengers **rose** following the shock in mid-2018, compared to its usual variation in other periods, being on average 15% higher than in 2016, 2017 and 2019 (Figure 60).

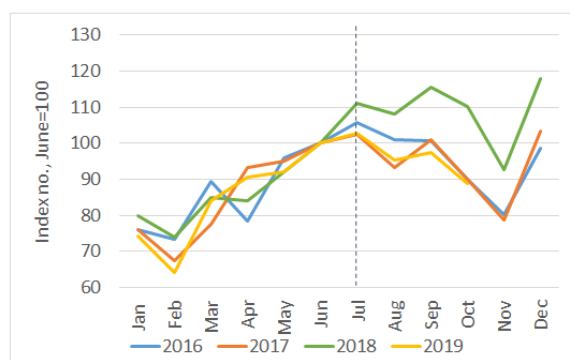
There is no significant deviation in **demand from non-residents** after July 2018, implying that **there was no crowding-out of non-residents**.

Finally, **resident passengers** account for around 40% of all passengers, a percentage which increases after the shock (from 37% before the discount percentage increase to 41% afterwards). This resulted in total demand trending 7% higher than in reference years (Figure 60, panel 60.2).

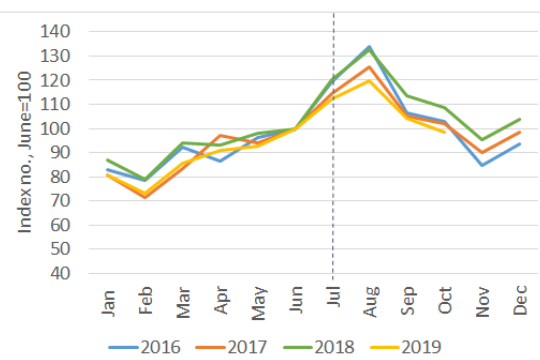
The increase in the average fare for tickets purchased by residents may have been influenced by the **reduction in the price elasticity of their demand** resulting from the increase in the discount percentage (an effect explained in section 4.1.1).

Figure 60. Variation in demand on Canary Islands–peninsula routes (2016–2019). Index numbers.

Panel 60.1 Resident passenger demand



Panel 60.2 Total demand



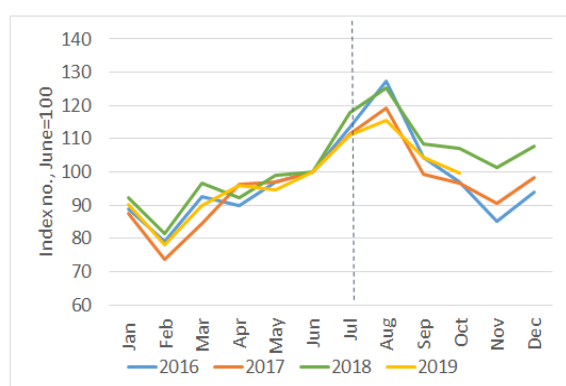
Source: compiled by authors from data provided by the DGAC.

Note: the dashed line marks when the discount percentage increased from 50% to 75%.

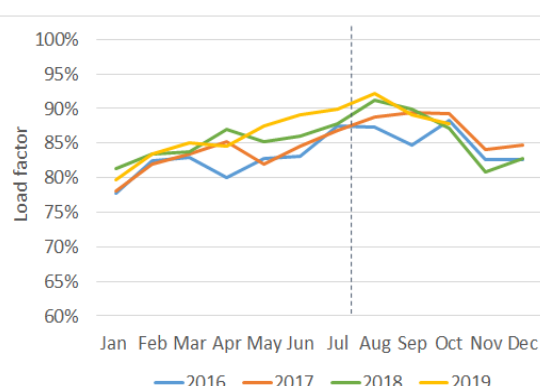
Additionally, **supply adjusted to demand** behaviour via seat capacity, which was 9% above the other years in July 2018 (Figure 61). As regards the number of operators competing on routes between the Canary Islands and the peninsula, this increased from seven to nine between 2017 and 2018, boosting the degree of competition in the market.

Figure 61. Variation in supply on Canary Islands–peninsula routes (2016–2019).

Panel 61.1 Seat capacity (index)



Panel 61.2 Load factor (%)



Source: compiled by authors from data provided by the DGAC.

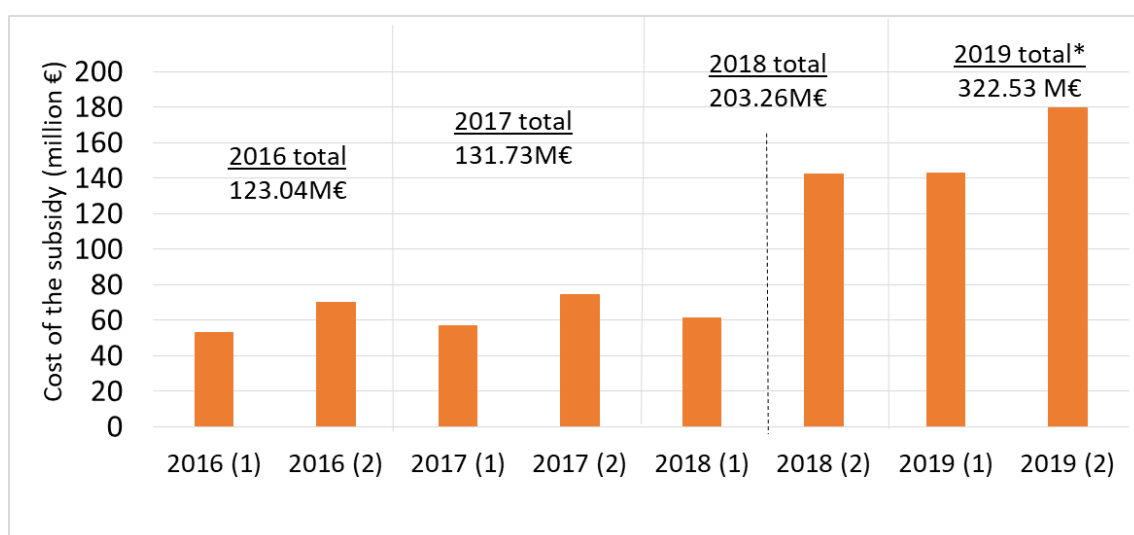
Note: the dashed line marks when the discount percentage increased from 50% to 75%.

Additionally, as with Balearic Islands–peninsula routes, changes in fuel prices do not appear to explain the rise in airfares on routes between the peninsula and the Canary Islands between June and December. But again, **congestion** problems,

at least at certain times or on specific days,¹⁸⁰ and other operating difficulties faced by airlines may be preventing supply from adapting at times of increased demand, causing prices to shoot up for some flights, and with them, average fares.

Finally, there has been a **considerable increase in the costs of the subsidy**. During the second half of 2018, there was a **90%** increase on these routes compared to the same period in 2017, and in 2019 the cost continued to rise, up more than 130% in the first half of 2019 compared to the same period in 2018. This increase was the result of both a rise in demand from resident passengers and a significant increase in average airfares.

Figure 62. Variation in the cost of the subsidy for Canary Islands–peninsula routes (2016–2019)



Source: compiled by authors from data provided by the DGAC.

Notes: * As information for November and December 2019 is not available, the cost data for the second half of the year and total for the year have been estimated assuming the same variation as the previous year.

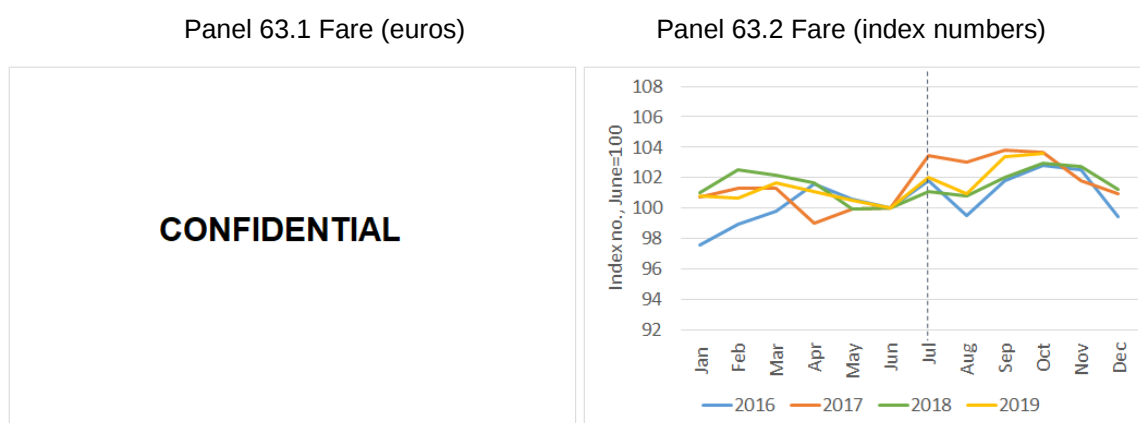
The dashed line indicates when the discount percentage increased from 50% to 75% in each of the aggregate groups.

¹⁸⁰ There are congestion problems, at least for some periods of the day, week or season, within the Canary and Balearic archipelagos, at the Palma de Mallorca, Menorca, Ibiza, Gran Canaria, Tenerife Norte, Tenerife Sur, Fuerteventura, La Palma and Lanzarote airports; and on the peninsula, at the Adolfo Suárez-Madrid Barajas, Josep Tarradellas Barcelona-El Prat, Málaga-Costa del Sol, Alicante-Elche, Almería, Asturias, Bilbao, Aeropuerto Internacional Región de Murcia, Girona-Costa Brava, F.G.L. Granada-Jaén, Jerez, A Coruña, Pamplona, Reus, San Sebastián, Santander-Seve Ballesteros, Sevilla and Valencia airports (IATA, 2019).

5.4. Inter-island routes in the Canary Islands

As with inter-island routes in the Balearic Islands, we note no change in trend for the actual average fares for tickets purchased by all passengers following the increase in the discount percentage, after July 2017. Therefore, in theory, **there does not appear to have been a shift of the discount to the fare** (Figure 63). Between July and September of that year, there is some deviation from other years, but the difference is small, 1%, and completely disappears in November.

Figure 63. Variation in average fares for all passengers on inter-island routes in the Canary Islands (2016–2019).

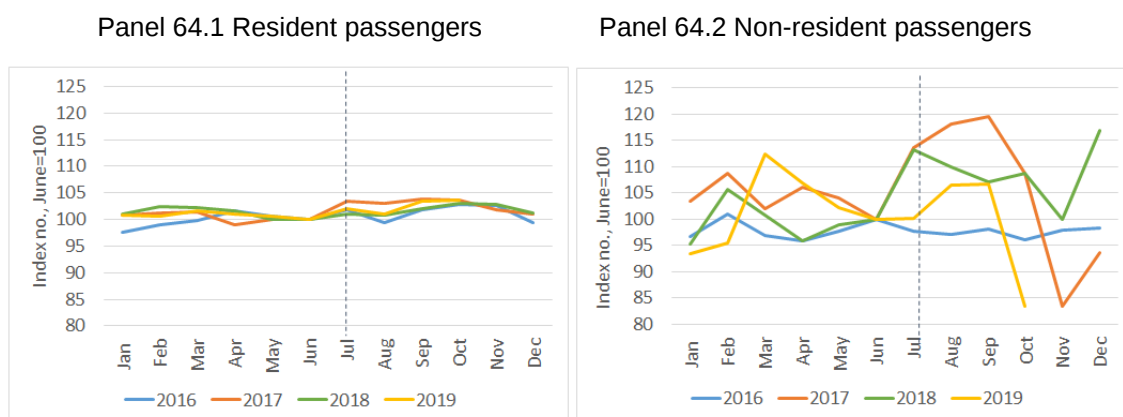


Source: compiled by authors from data provided by the DGAC.

Note: the dashed line marks when the discount percentage increased from 50% to 75%

If we distinguish between **resident and non-resident passengers**, a priori, we also see no clear break in the trend in fares for either type of passenger after the shock (Figure 64).

Figure 64. Variation in average fares for tickets purchased by resident and non-resident passengers on inter-island routes in the Canary Islands, in index numbers (2016–2019).

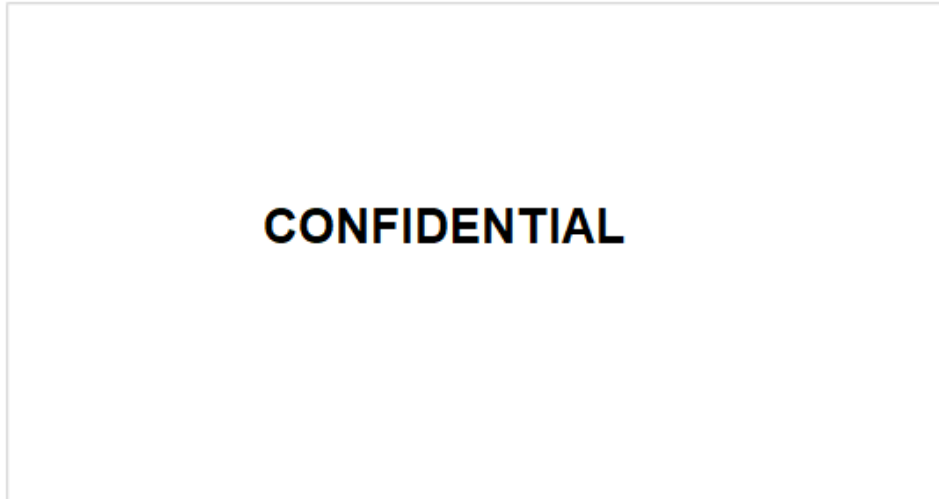


Source: compiled by authors from data provided by the DGAC.

Note: the dashed line marks when the discount percentage increased from 50% to 75%.

However, when we compare the variation in average fares for tickets purchased by residents and non-residents, there are significant trends: average fares for tickets bought by residents, which, as in other cases, started out (before the shock) at higher levels than those for non-residents (15% in this case), remain approximately constant, while average fares for non-resident tickets fall afterwards, widening the gap between the two, so that, after the shock, residents purchase, on average, tickets at 43% higher fares (Figure 65). Therefore, while a priori it cannot be said that the increase in the discount was shifted as a rise in the fare for tickets purchased by residents, the fact that average fares paid by non-residents fell while those paid by residents held steady may be the result of the increase in the discount, which reduces residents' price sensitivity.

Figure 65. Average fares for tickets purchased by resident and non-resident passengers on inter-island routes in the Canary Islands (2016–2019).



Source: compiled by authors from data provided by the DGAC.

Note: the grey dashed line marks when the discount percentage increased from 50% to 75%.

It is interesting to note, in this regard, that as explained in the economic description section, from 2012 to 2017, the Canary Island air transport market was a de facto monopoly, in fact broken up by the entry of Air Europa in the summer of 2017, coinciding with the increase in the discount percentage and the drop in the average fares for tickets purchased by non-resident passengers.

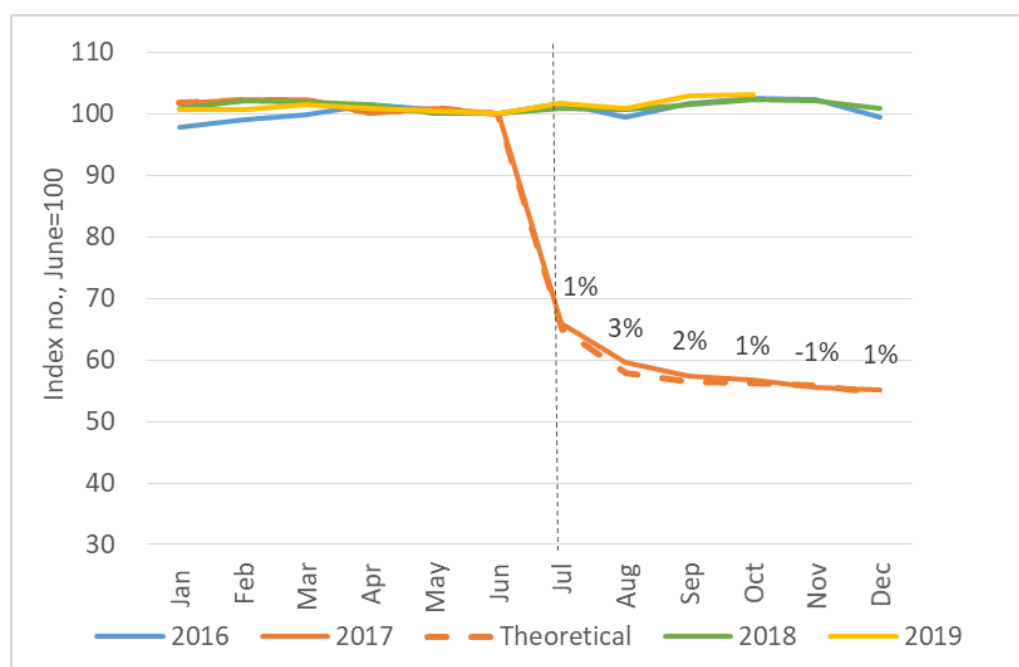
However, in June 2019, Air Europa announced its departure from the Canary Island market due to lack of profitability, so the implications of the increase in the discount may change in the future.

As in the Balearic Islands, **reference fares** imposed by the PSO are **not capable of explaining the containment of fares**, which, as explained in the economic description section (Figure 37, section 3.4.3.), are some distance from the reference fare throughout the period.

Additionally, as a result of the stability of average fares for tickets purchased by resident passengers, following the increase in the discount percentage, the actual average price paid by resident passengers fell rapidly to the estimated theoretical level (Figure 66).¹⁸¹ This means that it may be concluded that the **discount was effective in reducing the price of air tickets** on inter-island routes for residents by the amount expected (although if average fares had fallen to the same extent as those paid by non-residents, the price drop would have been even greater).

¹⁸¹ The theoretical price has been estimated according to the methodology set out in section 5.1.

Figure 66. Actual price paid by residents on inter-island routes in the Canary Islands (2016-2018) and comparison with the theoretical price in 2017. Index numbers.



Source: compiled by authors from data provided by the DGAC.

Note: the grey dashed line marks when the discount percentage increased from 50% to 75%.

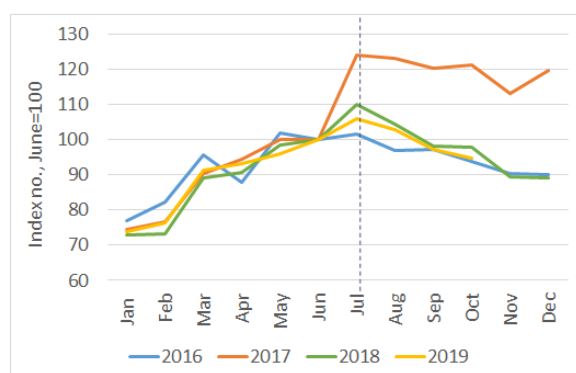
In terms of demand behaviour, at the time of the shock, **resident demand** broke with the trend, with a **sharp increase**, up to 25% above the other years (Figure 67). In addition, this increase in demand continued throughout 2018 and 2019.¹⁸² In the case of demand from non-resident passengers, there is no change in trend (**no crowding-out of non-residents**).

On average, the percentage of residents out of the total number of passengers was 87% between 2016 and 2019. In addition, this percentage increased after shock (from 86% before the shock to 88% afterwards). As a result, after the increase in the discount, total demand rose significantly, trending an average of 21% above the other periods.

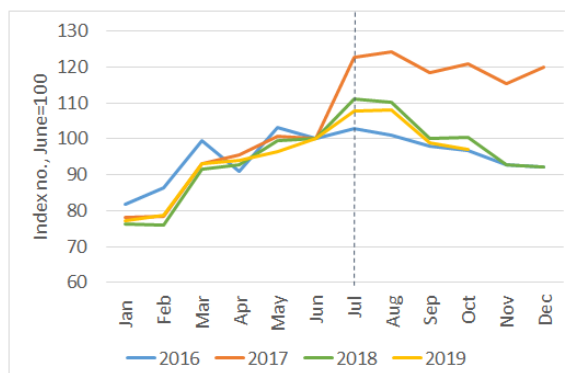
¹⁸² The change in level in 2018 and 2019 is not reflected in the graph presented, as data are presented in the form of index numbers, with the reference (100), in June of each year.

Figure 67. Variation in demand on inter-island routes in the Canary Islands (2016–2019).
Index numbers.

Panel 67.1 Resident passenger demand



Panel 67.2 Total demand



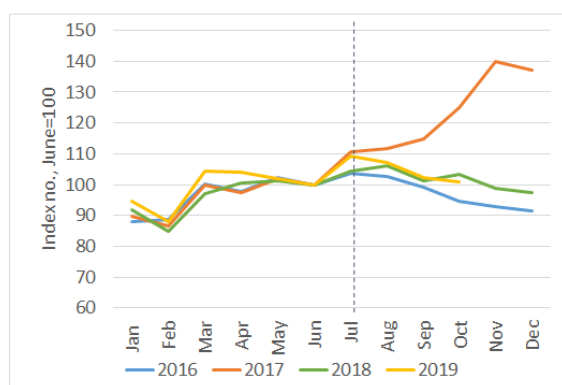
Source: compiled by authors from data provided by the DGAC.

Note: the dashed line marks when the discount percentage increased from 50% to 75%.

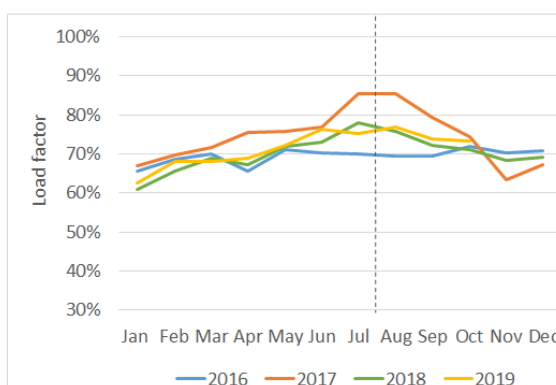
For its part, **supply appears to have adapted** to the increase in **demand**. At first, the adjustment was seen both in the load factor and an increase in seat capacity, but from September 2017, seat supply shot up (and held steady during 2018 and 2019), whereas load factor returned to previous levels (Figure 68).

Figure 68. Variation in supply on inter-island routes in the Canary Islands (2016–2019).

Panel 68.1 Seat capacity (index)



Panel 68.2 Load factor (%)



Source: compiled by authors from data provided by the DGAC.

Note: the dashed line marks when the discount percentage increased from 50% to 75%

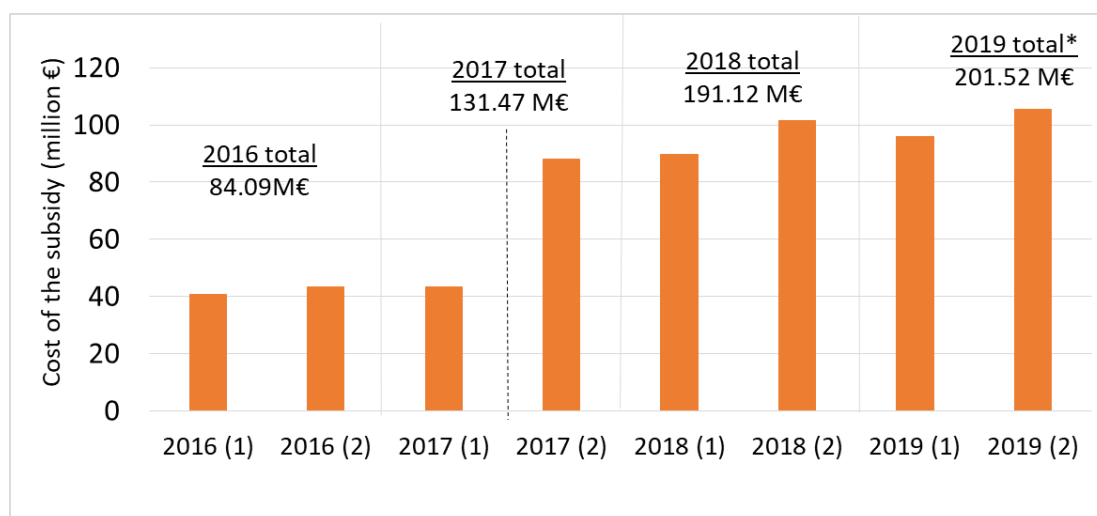
This different reaction by airlines on routes to/from the peninsula and inter-island routes may be due to the fact that inter-island routes have greater margin to increase supply via their load factor, given that it is much lower (71% on average between 2016 and 2019) than on routes to/from the peninsula (85% on average

between 2016 and 2019). This lower load factor on inter-island routes may be due to the fact that the existing PSOs on inter-island routes set maximum limits on this variable which, if exceeded, entail additional obligations for airlines.

The different behaviour in the adjustment of supply in the Canary Islands (by increasing the load factor only initially and then going back and compensating with an increase in seats), compared to the Balearic Islands (where this occurred only via load factor), also matches the limitations imposed by the PSOs, since in the Canary Islands the load factor limit was exceeded in summer 2017, while in the Balearic Islands the airlines had greater margin for adjustment.

Finally, **there was a significant rise in the cost** to the public coffers following the increase in the discount (**more than double**). In the case of Canary Islands inter-island routes, this was entirely due to increased demand by subsidy recipients.

Figure 69. Variation in the cost of the subsidy for inter-island routes in the Canary Islands (2016–2019)



Source: compiled by authors from data provided by the DGAC.

Notes: * As information for November and December 2019 is not available, the cost data for the second half of the year and total for the year have been estimated assuming the same variation as the previous year.

The dashed line indicates when the discount percentage increased from 50% to 75% in each of the aggregate groups.

5.5. Cost of the resident discount for public coffers

As evidenced in each of the previous sections, **the total cost of the resident discount to the public coffers** has soared as a result of the increase in the discount percentage. It grew by 112% between the second half of 2016 (when the subsidy was still at 50% of the fare) and the second half of 2018. The total amount of the aid, which was €309 million in 2016, reached €563 million in 2018, and the estimate for 2019 exceeds €765 million¹⁸³ (Figure 70).

On routes between the archipelagos and the peninsula, where the increase occurred in July 2018, the cost of the discount almost doubled in the second half of 2018 compared to the same period in 2017 (in the Balearic Islands and the Canary Islands, it rose 98% and 90%, respectively). In 2019, the cost continued to rise and is estimated to have exceeded €208 million¹⁸⁴ for the routes between the Balearic Islands and the peninsula (in 2017, the cost was €88 million) and €322 million euros for the routes between the Canary Islands and the peninsula (in 2017, it was €132 million). This rise is due to the increase in the discount from 50% to 75, and the rise in resident demand and the actual average fare.

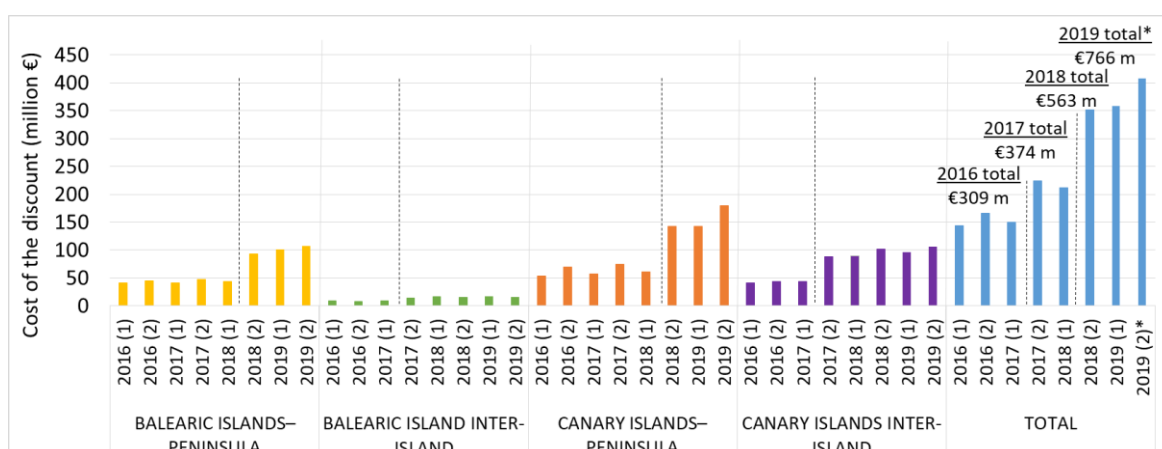
In the case of inter-island routes, where the subsidy increase occurred in July 2017, the cost also doubled after the shock and continued trending upwards. It is estimated that in the Balearic Islands (at €16 million in 2016), it topped €33 million in 2019, and in the Canary Islands (starting at €84 million), it will have exceeded €201 million¹⁸⁵. In this case, the rise in cost is due to the increase in the discount percentage and the greater number of resident passengers traveling.

¹⁸³ At the end of October 2019 (last date available), the cost already totalled €642 million. The total cost has been estimated assuming that in November and December the cost changed at the same rate as in the previous year.

¹⁸⁴ Because information is not available for November and December 2019, that year's total cost data have been estimated assuming that in November and December the cost changed at the same rate as in the previous year.

¹⁸⁵ Because information is not available for November and December 2019, that year's total cost data have been estimated assuming that in November and December the cost changed at the same rate as in the previous year.

Figure 70. Cost to the State of the resident discount per half year (2016–2019).



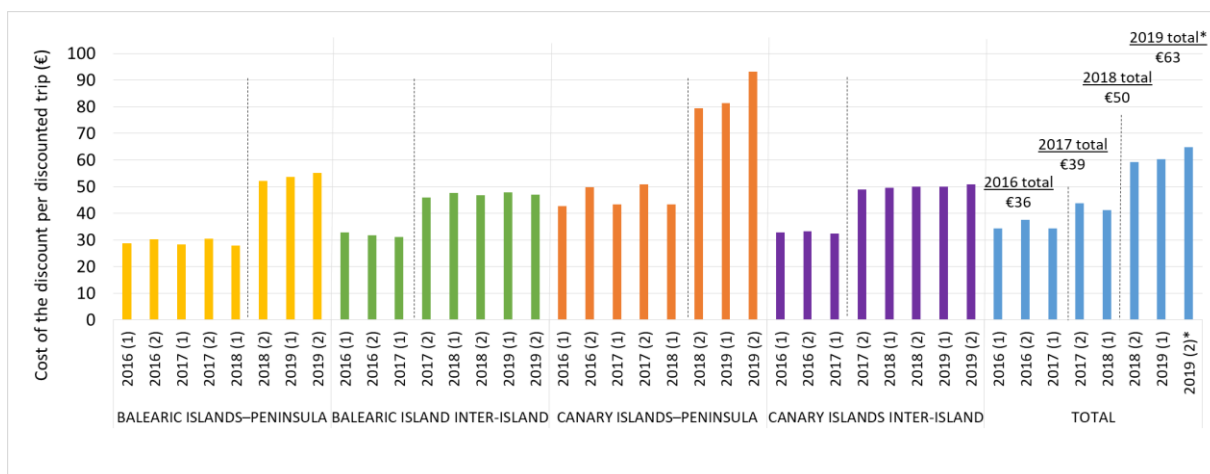
Source: compiled by authors from data provided by the DGAC.

Notes: * As information for November and December 2019 is not available, the cost data for the second half of the year and total for the year have been estimated assuming the same variation as the previous year.

The dashed line indicates when the discount percentage increased from 50% to 75% in each of the aggregate groups.

The above figures can be related to the public cost for each discounted trip (Figure 71). In the case of Balearic Islands–peninsula routes, the cost for each discounted trip went from just under €30 before the discount to around €55 in the second half of 2019; in the case of Canary Islands–peninsula routes, it went from around €40–50 per trip to €93 per ticket in the second half of 2019. In the case of inter-island routes, the outcomes were more limited, but still trending upwards: on inter-island routes in both the Balearic Islands and the Canary Islands, the subsidy went from just over €30 per trip to around €50 in the second half of 2019.

Figure 71. Cost of the discount per discounted trip per half year (2016–2019).



Source: compiled by authors from data provided by the DGAC.

Notes: * As information for November and December 2019 is not available, cost and demand data for the second semester and this year's total have been estimated assuming the same evolution as the previous year.

The dashed line indicates when the discount percentage increased from 50% to 75% in each of the aggregate groups.

6. CONCLUSIONS

Considering all of the above, and taking into account both the theoretical and empirical contributions of the existing literature, as well as the economic description of the Spanish island air transport markets and their development, a number of conclusions can be drawn regarding the support system for connectivity in island regions in Spain.

6.1. Any form of market intervention to support connectivity affects efficiency

A review of economic theory and the empirical evidence demonstrates that there is no perfect system to support connectivity. Any measure to promote air connectivity or aid for residents of island territories has advantages and disadvantages. Specifically, to the extent that these policies alter the conditions of demand or supply, the incentives for agents change, altering their behaviour and thus the functioning of the market. In other words, they generate distortions which are detrimental to market efficiency.

These effects do not make it less desirable to adopt measures to support connectivity where necessary, but they should be considered by the government, which must weigh the various alternatives in each individual case and assess the costs and benefits of the connectivity support system.

6.2. The increase in the discount has improved connectivity

The boost to demand by resident travellers has been very significant in all route groups, and in no case do we see any crowding-out of non-resident passengers from the market, thus improving the connectivity of residents, who pay a lower final actual price.

6.3. There are no signs of aid shifting to prices on inter-island routes

In the case of inter-island routes, we do not see higher average rates after the discount was increased, so the effectiveness of the measure was as expected. Residents have been able to benefit from the drop in prices they pay to the expected extent.

6.4. There are signs of aid shifting to prices on island–peninsula routes

Based on study of the available data and with due caution, the analysis seems to indicate that, in the case of **island–peninsula routes**, the **increase in the percentage of the resident discount** may have caused a **shift to prices** that diminishes the effectiveness of the measure.

We see the shift particularly in the average prices of tickets purchased by resident travellers. For tickets purchased by non-residents, average prices do not appear to have increased.

These results must be interpreted with caution. It is not possible to conclude that the fares offered to the two groups of passengers have been different, as differences may be caused by the different consumption patterns of resident and non-resident travellers.

6.5. Non-resident travellers changed their consumption pattern on island–peninsula routes following the increase in the discount

Although there is no decline in demand for non-resident passengers in any of the route groups following the increase in the discount percentage, the available data do show a number of changes in their behaviour, so the discount may have affected non-resident demand to some extent.

Specifically, the available data reflect a change in the behaviour of non-residents following the increase in the discount. They purchased their tickets more in advance than before and from different airlines (choosing low-cost airlines more than previously), as expected in response to the rise in fares following the increase in the discount.

6.6. Different patterns of behaviour between residents and non-residents could contribute to the existence of price differences between the two groups of passengers

The analysis indicates that residents and non-residents had, in aggregate, different behaviour patterns when buying air tickets for the routes analysed (non-residents purchased their tickets earlier than residents on the Balearic Islands–peninsula and Canary Islands–peninsula routes: on average, 11 and 18 days earlier, respectively, after the shock). These differences in behaviour may be due to the different price sensitivity between the two groups, the result of differences in the reason for the trip and the aid itself.

Airlines can adjust their prices according to consumers' willingness to pay, so that if they are able to identify patterns of consumption, for example, in consumers who usually fly at certain times or book a certain amount of time in advance, they could use that knowledge to offer higher fares for such flights and that period. This could result in differences in the behaviour of prices paid by the two consumer groups without there necessarily being any explicit discrimination in fares due to the buyer's residence or location at the time the ticket is purchased.

6.7. The adaptability of supply may reduce the shift of the aid to prices

There are several supply-side factors that may help explain the different behaviour of fares on routes to/from the peninsula and inter-island routes.

Firstly, in the case of inter-island routes in the Canary Islands, the emergence of a new operator immediately after the increase in the discount boosted competition and may have discouraged a fare hike. However, that operator announced its departure in June 2019, which could affect the implications of the increase in the discount.

On the other hand, the ability of airlines to adapt their supply to demand may have influenced the increase in fares on island–peninsula routes at certain times or on specific days, especially on some routes. During the period considered, there were **congestion**¹⁸⁶ problems at a number of Spanish airports for at least some periods of the day, week or season,¹⁸⁷ and it was more common for island–peninsula connecting routes to be between more congested airports than in the case of inter-island routes. Moreover, even in the absence of congestion, airlines may have operational difficulties in increasing supply to meet certain peaks in demand. This may explain why, given the difficulty of increasing supply, prices increased for some flights on the island–peninsula routes.

Also, the **load factor** was lower for flights on inter-island routes, so airlines had more room to absorb increases in demand without needing to increase (at least in the short term) seat supply.

In any case, data from 2008 show that, in the long term, it would have been easier for airlines to adapt their supply, increasing the number of flights and seats, thereby reducing price pressure. In fact, in July 2019 Iberia announced an increase in seat capacity for flights between the peninsula and the two Spanish

¹⁸⁶ IATA defines the degree of congestion at several levels. Level 1 airports are those where capacity is generally sufficient to absorb demand at any given time; level 2 are those where there are potential congestion problems at least for some periods of the day, week or season; and level 3 are those where: demand significantly exceeds capacity, expansion of airport infrastructure to adapt to demand is not possible in the short term, attempts to resolve congestion through voluntary readjustments in timetables have failed or been ineffective, and consequently, all airlines and other aircraft operators have a slot assigned by a coordinator to arrive at or depart the airport (information obtained from the IATA website, <https://www.iata.org/policy/slots/Pages/slot-guidelines.aspx>).

¹⁸⁷ There are congestion problems, at least for some periods of the day, week or season (i.e. they belong to levels 2 or 3 according to the IATA classification, 2019), within the Canary and Balearic archipelagos, at the Palma de Mallorca, Menorca, Ibiza, Gran Canaria, Tenerife Norte, Tenerife Sur, Fuerteventura, La Palma and Lanzarote airports; and on the peninsula, at the Adolfo Suárez-Madrid Barajas, Josep Tarradellas Barcelona-El Prat, Málaga-Costa del Sol, Alicante-Elche, Almería, Asturias, Bilbao, Aeropuerto Internacional Región de Murcia, Girona-Costa Brava, F.G.L. Granada-Jaén, Jerez, A Coruña, Pamplona, Reus, San Sebastián, Santander-Seve Ballesteros, Sevilla and Valencia airports.

archipelagos. In addition, the trend in supply on Spanish island routes since 2008 shows that there are no problems of adjustment. In fact, we see a decline in prices over the last 11 years in all route groups analysed (although in the last two years, the trend seems to be reversing). The exception is the Canary Island market, which had a de facto monopoly structure between 2012 and 2017 and again starting in 2019.

6.8. The increase in the discount has significantly increased the cost to public coffers

The cost to the public coffers has soared following the rise in the discount percentage. The total amount of the aid, which was €309 million in 2016, is estimated to exceed €765 million in 2019.¹⁸⁸

For all route groups, the cost of the discount has increased more than twofold since the percentage rose to 75%. On the routes between the archipelagos and the peninsula, where most of the spending on the discounts is concentrated, the rise in cost is explained by the increase in the discounted percentage, the boost in demand and the increase in average fares for tickets purchased by resident passengers. On inter-island routes, the cost increase has been solely due to the discounted percentage and increased demand.

¹⁸⁸ At the end of October 2019 (last available date), the cost already totalled €642 million. The total cost has been estimated taking into account that in November and December the cost changes at the same rate as in the previous year.

7. RECOMMENDATIONS

Evidence pointing to the price shift effect resulting from the most recent increase in the discount percentage, at least for island–peninsula routes, as well as the limited competition on inter-island routes, should be cause for reflection by authorities.

Moreover, in view of the significant rise in the cost to the public coffers for the resident discount following the increase in 2017–18, it is advisable for authorities to consider whether the current system achieves the established public objectives at the lowest possible cost.

Finally, this study has consciously left out distribution issues, as they exceed the scope of this institution's specialisation. But it is highly advisable for distribution issues to be taken into account in designing any kind of aid, bearing in mind that individuals with lower income are normally less likely to travel.

7.1. Evaluate measures to increase price sensitivity among resident passengers

The introduction of measures to increase ticket price sensitivity among resident passengers would reduce differences in behaviour between them and non-resident passengers, limiting the incentive for possible price discrimination strategies based on behaviour profiles. Measures that can be evaluated include the following:

- Setting limits on the amount of the discount per trip;
- Putting greater restrictions on the discountable parts of tickets;
- Systems for ex-post settlement of the discount, including tax mechanisms;
- Indicating the total price of the ticket next to the price once the discount has been applied, to raise awareness of the total cost of the trip.

7.2. Evaluate the connectivity support system as a whole

The partial discount on the ticket price for residents of non-peninsula territories is only one of the measures in force to compensate and foster their connectivity. Alongside it, there are others, such as discounted airport fees, aid for starting up new routes and PSOs. All these measures must be considered together in order to analyse how they contribute to public objectives, and they should be subject to ongoing review from the point of view of the principles of efficient economic regulation.

In the specific sphere of PSOs, the CNMC has spoken in the past about the undesirable effects they may have if they are designed improperly.¹⁸⁹

Although analysing the need for the current PSO scheme exceeds the aim of this study, some potential restrictions considered in the PSOs in force during the analysis period of the study may be noted.¹⁹⁰

Firstly, the PSOs introduce **supply rigidity**, so that a new airline can only enter the market when it meets the conditions of the PSO. These rigidities can discourage entry and strengthen situations of limited competition in the marketplace. Authorities should regularly assess whether ensuring certain levels of operation compensates for this potential reduction in competition.

Second, **load requirements** may affect flexibility in business decision-making, disincentivising the most efficient behaviour possible on the part of airlines (occupying aircraft to maximum capacity), and they may hinder the entry of new competitors with less operational capacity on these routes.

Thirdly, actual fares have been significantly lower than **reference fares**, meaning that the latter have not established a price limit in practice, which leads us to question the need for said fare regulation.

7.3. Evaluate possible aid schemes other than the current ones

In view of the distortions created by the current system, in terms of prices and budget costs, we recommend evaluating the use of other alternative aid mechanisms to compensate for the isolation of residents in the Spanish archipelagos, such as a system of tax exemptions for island residents delinked from travel, as already noted by the CNMC previously.¹⁹¹

However, as has been pointed out, any support measure for air connectivity has various positive and negative effects that must be taken into account when designing aid systems, in order to weigh them against the desired objective.

¹⁸⁹ INF/CNMC/089/17, CNMC (2017). Draft policy report on the proposal to establish a single airfare on the inter-island routes of the Balearic Islands

¹⁹⁰ Measures taken due to the state of emergency are not included in this reference. Ministerial orders issued by the Ministry of Transport, Mobility and Urban Agenda to address the health crisis caused by COVID-19 ban the flights that were being provided to or from the airports on the archipelagos and fix the routes and frequencies of the permitted flights, thus replacing the parameters governing the sector prior to the declaration of the state of emergency.

¹⁹¹ INF/CNMC/089/17, CNMC (2017).

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