An analysis of air market trends in Europe. The Alitalia paradox: any solution?

Riccardo Toso

Instant paper *2018*

Abstract

The following study wants to analyse the economic and managerial causes which have affected Italian carrier, Alitalia, in the last years. From the niche literature, some further evidence on its economic impact is provided: why the air market development in Italy is limited and how this company is still unable to detect and to react to the new market trends properly. Starting from an analysis of the air transport market in Italy and Europe, the paper examines the most recent trends in the transport sector, especially phenomena linked with low cost carriers and high speed rails.

The consequence of European liberalization in the air market has led not only to a remarkable increase in air demand, mostly thanks to low cost competitors which follow a cost leadership strategy, but also in those carried by high-speed trains. Within this background, the increase in travellers follows a cost reduction in fares, affected by the level of competitiveness, determining which shall be the key factors for a competitive advantage.

While most of the Alitalia's competitors have progressively adapted their business models to new emerging market needs, others met some obstacles. Thus, an analysis of peculiar carachteristics is provided. Through success examples, airline's winning factors will be explained as a combination of variables such as a more efficient long-haul fleet, optimal choices in leasing, jetfuel, strategic alliances and the dualism "cost minimization versus operational process maximization. Under these assumptions, new (kind of) competitors raised as disruptive innovators: this is not only the case of low cost carriers but also of those which are progressively moving to long haul business.

In the end, some possible future scenarios in Alitalia's case are presented, suggesting both managerial and operational solutions in order to solve the unsolved, where new relevant market trends and the Italian political instability are in the background.

What follows is based on the availability of data before 30th July 2018.

TABLE OF CONTENTS

Introduction

This study offers a deep look into the airline industry, analysing Italian and European trends as well as the role of Alitalia (AZ) – the Italian flag carrier – in the last decade. This means to find and classify financial and technical causes which have led to the current crisis.

On 2nd May 2017 Alitalia entered extraordinary administration, as requested by shareholders. This happened after that the recovery plan, submitted by Etihad Airways, had been rejected by 67% of workers, and consequently Etihad stopped from funding further fresh capital. In order to guarantee the flight schedule unchanged, the Italian government lent the umpteenth loan, composed of two tranches (EUR 600 mln + EUR 300 mln), and filed for extraordinary administration process. But now time has come. Since government is unlikely to provide further (taxpayer's) cash, a solution must be found without further time. To understand AZ case, a first description of the air transport market is needed.

For this reason, the **first section** talks about a brief excursus on the European and Italian air transport markets and their development, especially the economic impact which new entries such as low-cost carriers (LCC) had after the European deregulation process started in the 90's. In the last two decades, the European deregulation consequences shaked the air environment. This deregulation process needs to be considered as the turning point in the European – and so the Italian – air transport market, since it led to an increase in the number of competitors and so to an increase in the supply curve as well. Italian market itself has been subject to numerous changes. The resulting effect is a wider share of consumers which can afford cheaper flight tickets. LCC model is achieved by maximizing efficiency of the organizational core structure. Consequently, the competitive advantage is gained by cost minimization. The new market strategy is based on two main principles: keep as much as possible aircraft in service and cut all the unnecessary add-on services associated to flight tickets (seat preferences, priority lines, hold baggage). The section continues with a focus on the Southwest case study and the rising of high speed trains (HST) competition.

In the **second section**, Alitalia financial and technical issues are analysed. Starting from a focus on the lack in cost control, especially in jetfuel and leasing contracts overestimation, repeated managerial wrong decisions have led to waste billions over the last ten years. This section describes how Alitalia has been unable to adapt to new emerging scenarios and how it has undertaken many decisions with anticompetitive criteria: from the maintenance outsourcing to the never-followed strategic plan of the long haul.

On 23 April 2018, the European Commission opens in-depth investigation into Italian State loan on the Alitalia case. According to the European Treaties, any State Aid provided by a Member State is forbidden under art. 107 TFEU except those which are allowed under certain guidelines. This is an expected measure the European Institution has taken to define whether the State Aid granted by the Italian government is in line with EU rules or not.
Beyond this recent news, Alitalia is weakening its position inside the European – and global – market day by day, with an estimated loss of about EUR 1,3 million per day between Jenuary and March 2018. As time passes, Alitalia's bargaining power is decreasing in front of its potential buyers and so any further negotiation results in a more disadvantageous position. A comparison among possible resolution plans is then explained, presenting alternatives, weaknesses and opportunities. Due to the fact that many stakeholders are involved, and the political instability knocking on the door, there are several economic interests to be considered and therefore there cannot be an optimistic solution suitable for all.

As low cost model is spreading also in the long-haul routes as Norwegian Airlines does, the rules of the game are so dynamic that business models need to be adapted. Solving this Italian mess, nobody pretends to find the brave Muzio Scevola – the man who held his right hand on a fire to persuade the enemy king Porsenna to negotiate with Rome - but the Alitalia fairytale is still on stage.

"…Et facere et pati fortia Romanum est"[1]

The ancient Roman historian Livy wrote around 2 000 years ago, where *Romanum* indicates the Italians par excellence.

And this is just another *storia italiana*.

SECTION 1 - THE ENVIRONMENT

In this section, most recent trends in air market and emerging business strategies are analysed. Unfortunately, due to the lack of data, some facts presented below belong to different years or months, if specified. The author did his best to harmonize the current study with this issue.

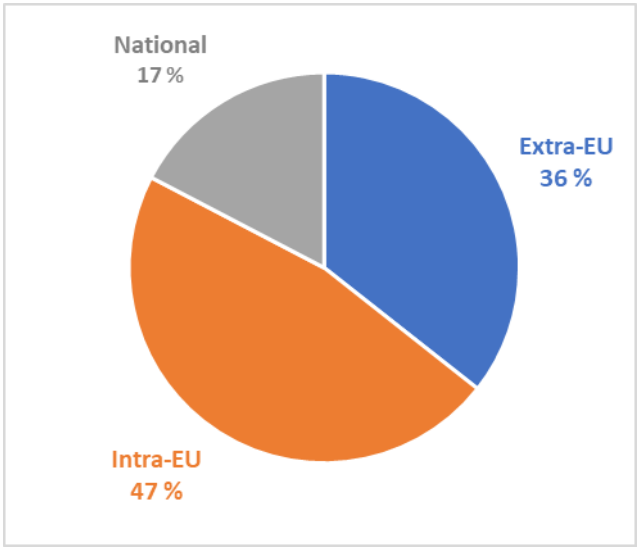
1. The air transport market: recent trends

[1] Working and suffering bravely is the attribute of Romans (meaning "Italians" here). Source: Livy's *Ab Urbe condita* 2, 12, 9. Written between 27 B.C. and 14 A.D.

European trends

Italian airlines industry holds a 7,2% market share of the European value, according to Eurostat data report 2017. Going further, international passengers from/to Italy inside the European borders (intraEU) increased by 16,6% in 2016/2017. In particular, flights from France, Germany, United Kingdom and Spain to Italy[2] - and vice versa - carried 63,5% of the total intra-EU passengers in 2017. As described below, there was a constant development in the European air traffic, expecting to exceed EUR 1 billion by the end of 2018. The intra-EU market can be considered *de facto* as a one unified domestic market: therefore, all carriers must operate under the same EU regulations and laws as well as security standards. Think that the "*EU Air Safety List*" - which ban airlines unable to respect regulatory European standards - is reviewed every year.

Figure 1: EU-28 air passenger transport in 2017



Source: Eurostat, Air Transpot Statistics 2017

Moreover, Italy's 2015-2016 growth has been lower than the average of EU-28 Member States which has grown by +5,9% in total air passenger's volume: almost 1 billion of people were carried in 2016[3], up by +29,1% compared with 2009. This is a record. Between 2015 and 2016, intra-EU flights raised by + 10,2%, as result of a deregulation process started in the '90, especially in *Bulgaria* (+22,5%), *Romania* (+20,5%) and *Cyprus* (+18,1%) which have recorded the highest score with respect to other Member States. In the last years, some East-European local airlines have been subjected to acquisition or mergers which have created a stronger impact than others (*Wizz Air*).

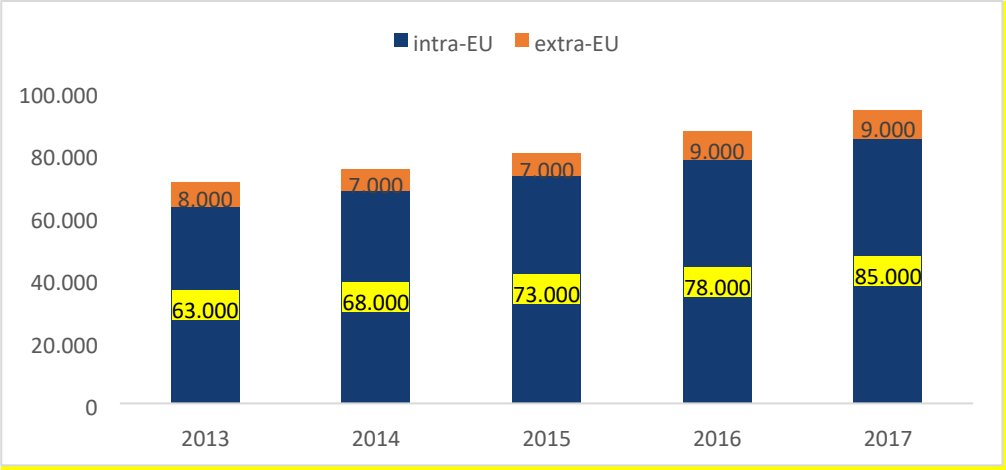
On April 2018, the European air traffic volume reached a market share 26,5% globally. Even if its load factor has been stable (-0,3%), the European traffic volume increased by 9.8% with respect to same period in 2017. In addition, the European load factor, within 84,1% overall in 2018, is the highest value globally[4] and it is almost 4% greater than the global average. In fact, Europe value is followed by North America (83,3%), Asia-Pacific (82,8%), Latin America (81,1%), Middle East (77,1%), Africa (73,1%).

Figure 2: European air traffic growth in Italy (mln pax).

[2] *UK*: 15.059.870, *Germany*: 14.029.315, *Spain*: 13.912.947, *France*: 10.944.464. Eurostat, Air Transport Statistics 2017

[3] Eurostat, 152/2017 - The daily record set its pick within 35 937 flights on June 30, 2017 and an average of 29 000 flights per day

[4] IATA, Press Release No. 24, May 2018



Traffic data refers to European borders only (intra EU + extra EU).
Source: author's elaboration based on ENAC, Traffic Data 2017 (ed. 2018).

One side extra-EU note. Globally speaking, Chinese airlines are facing the fastest increase in local demand: it grew by +200% in the last decade (2007-2017), going from 184m to 549m. According to the International Air Transport Association (IATA), by 2022 China will overcome US, becoming the biggest air market worldwide. In addition, top 3 Chinese carriers transported 339m in 2017, mostly on international routes.

Italian trends

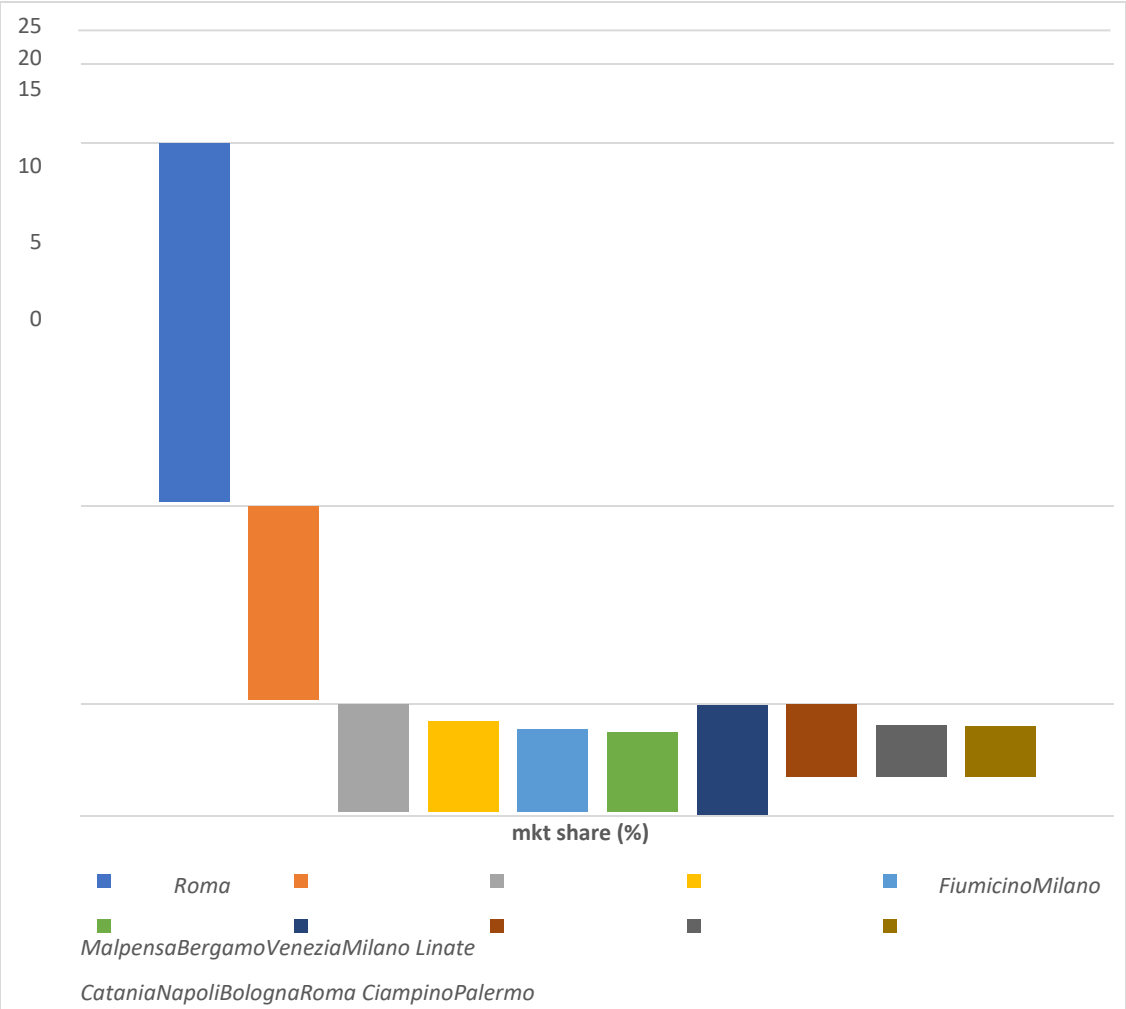
The air transport market is always at the centre of interests among stakeholders, passengers, and institutions, mostly in Italy. Recent positive trends demonstrate how it can be a driving force for the Italian economy. According to ENAV, the current Italian air market value of EUR 70 billion will increase to a level of EUR 150 billion soon as well as passengers are expected to double in next years.

The overall air traffic volume is increasing year by year not only in Italy but also in Europe. More precisely, the passenger volume in the European airports increased by +7,6% in the 1Q of 2018[5]. This means that we are assisting to a great expansion of the air transport market, subjected to multiple externalities, deregulations, competitors and a progressive growth in technology. Hence, air transport market can be one of the main leading exempla to best contribute to the Italian economy. The key factor is investing in the long run properly. This is an advice addressed to public and private air stakeholders. Under a wider liberalization perspective, right investments may lead to a better market situation: a more efficiency in infrastructures and human capital is the only way to compensate the gap within the positive trend in passenger demand and increase in competition.

In 2017, the Italian air transport market has recorded a progressive-but-fluctuating positive trend, within an increase of +6,2% in the number of passengers with respect to 2016 (174.628.241 total pax[6]) and +3% in the air movements (number of flights).

Figure 3: Top 10 Airports in Italy in 2017 (% pax)

[5] ACI Europe, Airport Traffic Report, May 2018
[6] Double counting included in the intra-EU and domestic passengers.



Source: author's elaboration based on ENAC, Traffic Data 2017 (ed. 2018)

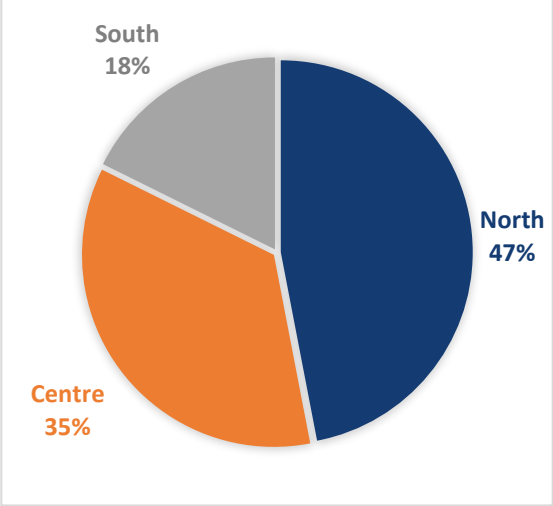
Focusing on the development of the major airports, which better attracts the effects of air traffic volume, Roma Fiumicino (FCO) represents the largest Italian airport in terms of passengers and it holds almost ¼ of the total Italian airports (23,4%). This because Alitalia (AZ) has been holding its hub in FCO for decades, strengthening here its international routes and so its market position. At the same time, the Italian air market has been excluded by the European average development of oversea routes (long-haul).

European major full service carriers (FSCs) have been expanding their network creating a complex combination of short-medium haul and long ones. Thanks to a preferred hub-and-spoke system, FSCs manage to collect as many passengers they can from secondary airports, establishing one or more major hubs which represent at the same time their main gathering harbour and a sort of trampoline to be connected with the rest of the globe by intercontinental flights. A relevant consequence follows: nowadays there is an inefficient international network in Italy compared to other European countries caused by the monopoly that Alitalia used to detain once.

The following pie chart (Fig. 4) is useful to analyse the South-Italy development, under an air traffic point of view. It could be a good indicator as a quantitative measure of the dark face of the Italian economy. However, there is a relevant growth in Napoli *(+26,6%)*, Catania (*+15,3%*) and Palermo (+*8,3%*) airports with respect to 2016, despite a current slower development in the South-Italy, as probably known by most of the readers. Even if they hold together a little market share around 13,5%, they respectively are ranked

at 1th, 2th and 6th place overall in terms of marginal growth with respect to the previous year 2016[7]. Furthermore, NAP airport increased by four times the Italian average growth in 2016-2107 and, between January-April 2018, it recorded +46,1% pax growth, which is the highest among European airports in the medium-size airports (5 – 10 million pax)[8].

Figure 4: Geographic location among top 10 airports in Italy in 2017 (overall pax)



Author's elaboration based on ENAC, Traffic Data 2017 (ed. 2018)

Furthermore, AZ continuous crisis have made its hub[9] FCO stagnant or even downwards in terms of pax volume (-2,9% in 2017) in the last decade. AZ pax traffic has decreased by -5,6% overall in FCO only.[10] The probability to see FCO rising from its ashes would increase only through a severe restructuring plan, implementing or even substituting the AZ service. On the other side, Milano Malpensa (MXP) is in different condition. The 12,9% growth permits to forecast a better worthy future, since the small AZ market share would result in attracting more investors such as the recent
Air Italy new hub. Unlike those cases, the medium-size NAP has registered such a relevant growth mainly thanks to the rising of LCCs (61,3% share in 2017) and the Italian aviation itself should follow this leading example.

2. The effects of the air deregulation

The virtuous circle

Before explaining the effects of the European liberalisation process, the reader would appreciate a brief excursus about the relevant relationship between air connectivity and economic growth, in a correlated *virtuous circle* (Fig. 5). An overall economic growth affects the air travel demand positively and, on the other

[7] See Appendix A for more specific data
[8] NAP growth path: +3.4% (2015), +9.9% (2016), +26.6% (2017) in terms of pax volume. Assaeroporti (2018), ENAC (2018), Aci Europe (2018). All data refers to 2017.
[9] In FCO, AZ detains 42% of total pax volume (more than 17 / 40,9 million pax). Aeroporti di Roma (AdR), Financial Report 2017
[10] Variation %2017 vs 2016: Domestic: -7,0%; intra-EU: -9.0%; extra-EU: +1,3%. AdR, Financial Report 2017

hand, an increase in pax and flights stimulates an overall economic growth, creating a double effect. The wider and more complex is the air connectivity of a country, the stronger is its air competitive value. Therefore, under an aviation perspective, mobility and network are then stimulated, facilitating a faster and stronger development in terms of trade, R&D (headquarters), productivity, FDI[11].

Figure 1: The virtuous circle

Author's elaboration

Furthermore, air accessibility is also positive correlated with GDP and investment growth, as demonstrated by Sellner and Nagl (2010). Their econometric growth model - where a 1993-2006 series inside first 15 EU Member States was evaluated as well as European air traffic volume forecast
- is used to predict the economic consequences of an increase in capacity at the Vienna International Airport. The result found that an increase in air accessibility would add an additional GDP growth in Austria of accumulated 0.81%.

In particular, Bannò and Redondi (2014) have analysed how FDIs change within the opening of a new Italian route. They have found a correlation within a FDIs increased overall by +33.7% in the following two years after opening of the new routes, against a decrease by -16.6% of FDIs in comparable areas. As concern the case of Italy, Italian attraction is still significantly weaker, and this could be explained by the lack of infrastructures, the so-called *country effect*. This result also explains how the attractiveness of airport facilities and the related infrastructures are key determinants in investment allocation, implementing the idea proposed by Arauzo-Carod et al. (2010) who evidenced which determinants affect industrial location the most. The table above (Fig. 5) summarizes the virtuous circle in the air market sector through the correlation between connectivity growth (*aviation*) and economic growth (*region*).

The process of liberalization of the European air transport market, which came into force in April 1997, has led to a better and more efficient competition of this European public utility service: the more characters

[11] A foreign direct investment (FDI) refers to an investment made to control ownership in one country by an entity based in another country

there are on the stage the more efficiency in terms of safety, ticket price, routes for consumers. These consequences follow an increase both in the demand and supply levels and the main market's effect was a further step towards the creation of the LCC business model.

The European liberalisation came after the US example which took place since 1978. President Carter's administration gave his contribution for a wide air deregulation whose targets were a stronger air market growth, followed by an increase in competition. The economic impact can be compared to a shuffle of a pack of cards. It can be summarized as follows:

- To permit both new market competitors and the expansion of new routes.
- To make routes commensurate with air traffic volume
- To better control tariffs' variability (based on cost efficiency controlling)
- To provide benefits with the aim to sustain and facilitate access in secondary, less connected, areas
- To give incentives to mergers and acquisition to strengthen the US air market

The European air deregulation

The European liberalisation spreads its early effects in the late '90s. Then, it slowly increases its relevant consequences in the first part of the 2000 as the LCC-based model was adopted by multiples - and new - airlines. The initial process took place from 1983 to 1992.

Within the 1983 European directive[12], a partial liberalisation started covering minor airports.

Although aircraft should have carried less than 70 passengers, according to the UE directives, it facilitated an increase in the market size among regional routes. A curious effect raised from this: a concrete development across regional cities led to a better growth in secondary airports and vice versa, under an advantageous double effect. More air traffic means more investments brought by passengers and potential profits to all stakeholders. On the contrary, a stronger business prospective could attract more tourists, workers and all the complementary companies operating in the same area/sector. Hence, FSCs have had the opportunity to invest in the regional airlines, sometimes through mergers or share's acquisition. This was the major cause which led to a never-seen increase in air market competition.

In the 90's, the European deregulation effect had a slow diffusion rate and it started spreading its effects only through the low-cost model by the first part of 2000. In the middle of the '90s, the 90% domestic routes were operated by one single airline compared with the 66% intra-EU routes. A partially initial inefficiency of the new liberalisation can be evaluated by comparing some airline measures in the period 1985-1999:

- *Passenger kilometre* (PKM): there was an average annual growth in the intra-EU traffic by +6,7% in the interval 1993-99 - after deregulation - while by +7% in 1985-1993[13] - before deregulation.

[12] Directive 83/416/EEC

[13] Boeing Commercial Airplanes Group, Current Market Outlook 2000

- *Revenue per passenger kilometres* (RPK): according to AEA [14], although domestic RPKs remained unchanged in the national market, it decreased by -18% in the intra-EU in the 199399. This data was coherent related to other foreign markets with different liberalisation degrees.

- *Number of regional carriers:* this data was subjected to a relevant growth which, instead, tripled (2,8 times) their PKM by 18,7% per year. Their market share raises from 4,7% (1993) to 8,9% (1999)[15]. From 1999 on, at its peak, it was gradually reduced, being absorbed by larger companies, or, in other cases, substituted by the new LCCs' entries;

In primis, Ryanair and EasyJet had a rapid development in the Irish-English air market with many routes connecting Ireland and UK with Europe only; from 2003, they started increasing their market share also in other European countries, especially thanks to the deregulation process which started showing its main effects in this scenario, after almost a decade. The development of air transport market, favoured by the increase in the low-cost business model, should be then considered not only as more benefits for consumers but also as an overall economic locomotive for all the related activities linked with the airlines' market. All the complementary sectors, such as airport further services and any kind of tourist assistance (i.e. car rental, hotels), increase their monetary returns, especially thanks to the – increasing - touristic flow. This is the case of the routes in which LLCs operate the most.

We now move our analysis to the LCC model, explaining the main reasons why it is still conquering larger shares and a greater number of passengers.

3. The rising of the LCC model

The structure

How do the *low-cost carriers* (LCCs) manage to provide the so called "low cost" tickets? How have they achieved a market share of 48% in the overall European seat capacity?[15] This result has followed a continuous growth in LCCs' share in the last decade: the European turnover took place in 2012 when full service carriers (42,4%) were overtaken by LCCs (44,8%), according to the European Commission Report on Transport (2013).

Keep in mind that low fares are just a consequence of the efficiency maximization gained by the company in specific organisational procedures. In fact, any airline has a complex hierarchical structure in which high-skilled workers cooperate at their best to maximize the overall company's efficiency and so enlarge or strengthen the airline market position.

Thanks to the deregulation process started in the '90s, today any European airline is allowed to operate inside other Member State's air zone: i.e. a Spanish carrier can operate inside the German borders and vice versa. Under this scenario, low-cost structure is spreading along the air market, following a global phenomenon of deregulation which facilitates further competition, not only in Europe but also in the rest of the world. It became one of the most interesting case to be analysed worldwide.

[14] Data from AEA Report (2005) - Association of European Airlines (AEA) is not active anymore since the end of 2016
[15] Boeing Commercial Airplanes Group, Current Market Outlook 2000.
[15] European seat capacity is expressed in *available seat per kilometres* (ASK). It is equals to the number of seats available multiplied by the number of kilometres flown

We outsource everything that we can outsource as long as we can manage it and control it
- Warwick Brady, EasyJet Chief Operating Officer

In fact, offering low cost ticket is a successful key to gain the larger market share, playing the socalled *cost strategy*. Hence, LCCs implement cost minimization in order to reduce costs without losing security and efficiency. The LCCs model can be clarified as a mutual combination between process optimization and cost minimization; the most relevant characteristics are:

- *A specific strategy:* instead of serving main and biggest airports, secondary airports are preferred by LCCs because of their cost effectiveness. For this reason, Orio al Serio (Bergamo, North Italy) succeeded in emerging as a new LCC hubs. Landing in smaller airports result in two main advantages: first, cheaper airport taxes, second, faster and easier handling. Some other LCCs swipe to bigger, more competitive airports (EasyJet). A focused analysis is conducted to choose more profitable routes, preferring a point-to-point network.
- *A thin structure:* outsourcing is preferred for specific activities such as ground handling, maintenance, runway management, on-board catering. In addition, through a simpler corporate process, there is an increase in efficiency in terms cost reduction and decisionmaking procedures
- *Leaner operational processes:* reduction in handling time is a priority thanks to outsourced services and higher flown-per-aircraft time. Fleet homogeneity is another key factor: same aircrafts lead to cost reduction in maintenance, pilot training and cabin crew management, since any model is equal. In fact, a better efficiency is achieved through standardization and younger fleet's age[16]. Moreover, a zero diversification – one single class, no business - leads to passenger densification. Therefore, a higher load factor is gained.
- *Booking* is not outsourced: LCCs used to sell mostly of the tickets via web with no further transaction costs. Thus, direct selling is preferred in order to avoid travel agencies as intermediaries.

All the operations must have such a reliable efficiency so that final price ticket could be more affordable, increasing the number of travellers as an economic consequence. The main key factors come from the optimization of such processes. Although many LCCs have recently faced some stumbles due to the market volatility, most of them keep adapting themselves to specific market needs and trends. This is the case of EasyJet (UK), which is used to operate to/from few large hubs against the secondary airports' tendency, *Norwegian Airlines* (Norway), which is the current market leader in the long-haul LCCs, or *Germanwings* (Germany), which is the first to introduce a frequent flyer programme (FFP) whose access is before payment.

In order to better understand how the LCCs were able to gain their current market power, a deeper focus on their business model is required. In fact, the air transport management found its main evolution in the raise of the LCCs business model, especially within *Southwest Airlines* (US), *Ryanair* (Ireland) and *Norwegian Airlines* (Norway). In the following lines these three carriers will be presented to show how the management has changed across different competitors in the last two decades. All three LCCs differ each

[16] A modern fleet permits to consume less fuel and it requires less maintenance.

other by their business structure and strategy and they have been growing with a specific consolidation scope in the long run.

Southwest Airlines

The last FAB dossier[17] available (2017) reports that Southwest Airlines (SWA) is the world's 5th airline in terms of passengers (+200 964 million pax) and the US 4th airline in terms of revenue, 20,425 $m (9th globally). Since 1972, it has been achieving a positive profitability, until serving 100 destinations across 40 US states today, after the recent expansion to Mexico, Central America, Caribbean islands and Hawaii[18].

Herb Kellher, the father of SWA, has managed to create a new kind of airline, which differs from other US carriers, starting from a specific marketing ideology. His motto is:

If you get passengers to their destinations when they want to get there, on time, at the lowest possible fares, and make sure they have a good time doing it, people will fly your airline

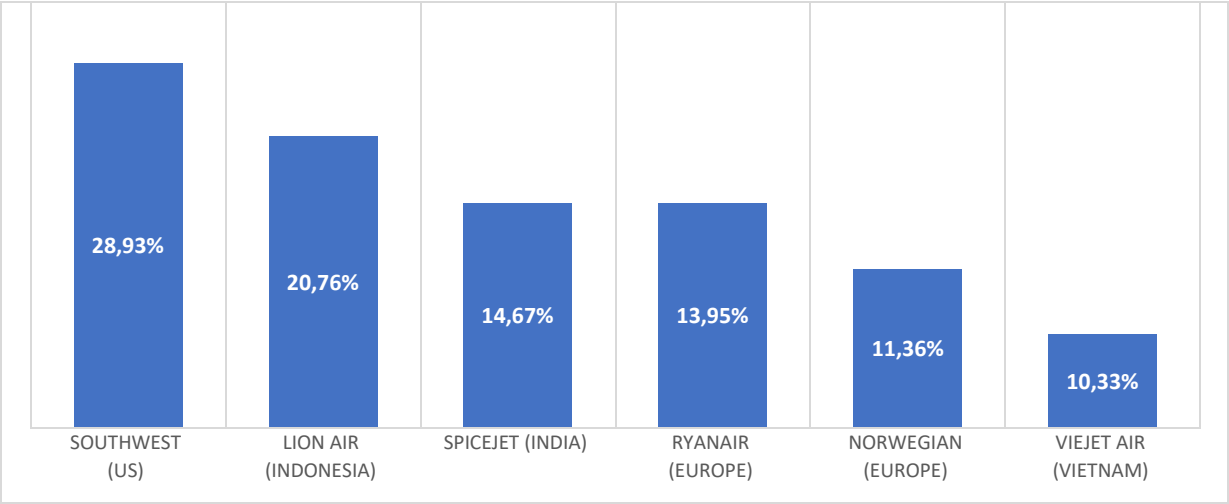
In the 60's, SWA started operating in Texas (US) only within regional flights, three planes and 150 staff members. Today it operates with a more fuel-efficient and modern fleet which is composed by 720 Boeing 737 only and covers more than 4000 daily routes thanks to more than 57 000 employees. There are many characteristics which have made SWA such a leader in its market. The process innovation brought by SWA goes around human resources *in primis*: among employees, cabin crews and travellers, satisfaction and gratitude are the most important aspects. This harmonic equilibrium is the result of the interaction of many factors:

- The highest possible *airline perceived quality* is not only achieved through the excellent number on-time flights and limited complaints but also through a great corporate culture which transmits its core identity. It is not rare to see flight attendants entertaining or singing while welcoming passengers onboard or, in general, promoting a relaxed and positive environment.
- *Secondary airports* allow to reduce driving time to get to major airports and a *point-to-point* structure permits to have no stopover flights between small markets. Flights are quicker and shorter, resulting, between the lines, in cost reduction in fuel
- *Fleet homogeneity* **(***B737)*: SWA is the world largest Boeing 737 user, operating with 720 aircrafts on April 2018. It is the top customer B737 MAX, the most recent generation model, in terms of total orders (orders & deliveries), see following table *LCCs Distribution – Top buyers B737 MAX* (Fig. 6). This Boeing model is considered one of the most comfortable and most efficient narrow-body passenger jet flying today.

Figure 2: B737 MAX top buyers (+100 orders) - LCCs Distribution

[17] "*Top 100 airlines by* traffic", Flight Airlines Business (FAB), Data Report, August 2017

[18] The airline received the Statal Fly Licence on March 2018. Californian Oakland, San Diego, San Jose and Sacramento as departure points; aircrafts used: *B737 MAX*. Source*: Los Angeles Time*, 4 May 2018. See graph "*LCCs Distribution – Top buyers B737 MAX*" for more details



Source: author's elaboration based on "Boeing 737: Orders and Deliveries", The Boeing Company. April 2018.

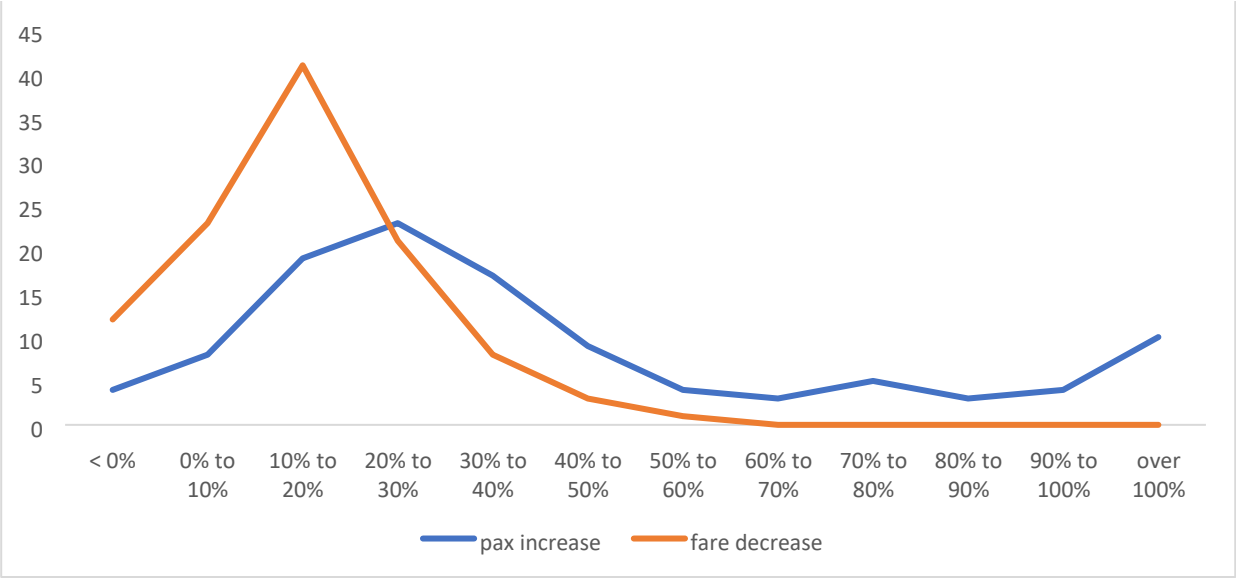
Note: Top 14 customers with more than 100 total orders are analysed (probability distribution: LCCs: 46%; FSCs: 34,8%; leasing companies; 19,2%). Moreover, 280 SWA total orders represents 13,3% of the 2 105 samples analysed. SWA has been delivered the first B737 MAX model on August 29, 2017. In the table above, only LCCs customers are represented. For further details, see appendix IV

- *Fuel hedging* limits price variation, permitting lower costs. Therefore, SWA achieves to purchase jet fuel up to ½ of the market price. Between 2013 and 2017, SWA increased its ASK per gallon from 115,37 (2013) to 120,99 (2017)[19] thanks to fleet replacement with newer and more efficient aircrafts (cf. *B737 MAX*). This fuel hedging strategy permitted SWA to have its average kerosene cost +3% comparing Q1 2017 and Q1 2018. Its main competitors recorded higher values instead: *Delta* increased its fuel price by +22%, *United Airlines* by +23.4% and *Spirit*, its main low-cost competitor, by +21.5%.[20]
- Efficient *boarding procedure*: SWA has a specific seating policy which result in saving much aircraft ground handling time. In short, each passenger is assigned a letter – group A, B, C - and a number – position 1-60. This combination is a reserved spot for the traveller when boarding is called, so people just need to be in line following both group and position code assigned. Steffen *(2008)* tested different boarding processes for 72 passengers by multiple computer simulations: SWA is on average 33% faster than other US airlines.

Figure 3: How SWA entry affect the market: a pax-fares comparison

[19] Author's elaboration based on Weener Ezra (2018), "*Fuel Hedging to Help Southwest, Not Peers*", from *Seekalpha.com* (last visit: June 2018). Southwest Airlines data. Consider 1 mile = 1,609 kilometre

[20] With oil price still rising with no predictability, Q2 2018 is expected to take a hit, according to recent market trends. With respect to its direct competitors (i.e. *Spirit, United* and *Delta*), SWA's hedges should help shield it from a potential increase in oil price.



Source: author's elaboration based on Beckestein (2017)

Note: Data sample collects 109 routes in the interval 2012-2015. Note this a distribution in terms of % increase/decrease. The graph above compares trends between passenger volume and fares, after SWA entry a new market (i.e. new route). There is an overall pax increase – doubled (+100%) in 10/109 case – and an overall decrease in fares.

The so called *Southwest effect* (Fig. 7) describes the relevant hike that SWA has when opening new routes and serving new airports. This expression was first introduced by the US Department of Transportation in 1993 (Bennet and Craun, 1993). SW effect has caused an overall decrease in fares whenever Southwest enters a new route: this effect is caused by the principle of demand and supply equilibrium. How much does a SWA entry affect fares? Anytime SWA enters a new market with lower fares, that market demand increases while competitors' prices need to fall to keep their competitiveness 'rate. This causes both an overall decrease in fares, boosting the local economy, and an overall growth in air traffic volume, since demand is affected. As seen in the tables below, the *Southwest effect* is the combination of two distributions which refer to passenger volume and fares. After collecting data from 109 different US air markets (routes) in 1993, in the 70% of Southwest new entry, the average passenger amount of that market increases by 20% and more. On the other side, almost in the 50% of the sample, the average market fare decreases by 15% and more – which is a positive effect as well - in the ½ of the markets analysed.

Ryanair and Norwegian Airlines

The Irish company has its main winning business in the fleet homogeneity, within current 315 B737800, offering over 1,600 daily flight and serving about 190 European airports. It scheduled short-haul flights per day serving approximately 190 airports throughout Europe.

Initially, Ryanair operations connected UK and Ireland with the continent and vice versa. In addition, the Irish airline managed to adapt its business model to the European different context, laws, and consumers' needs. The Irish carrier carried 120 million travellers in 2017, almost six times AZ traffic.

If you look at the development of Ryanair, at how many engines Rolls-Royce is producing, at the amount of aeroplanes Airbus is producing – those are things which point to growth

- Tim Scharwath, Executive Vice-President of Kuehne & Nagel

Nowadays, in order to maintain its competitive advantage, Ryanair has to implement its business model, coming to specific agreements among others LCCs not only in the short-medium hauls (European zone) but also in the long ones. Above all, Asia and US are recording the highest demand under these circumstances. This would lead to a market revolution since today there are still missing frequent flight programmes (FFP) or alliances which would result in more profitable routes, since distance and density are affected. In future, further mergers or acquisitions among similar competitors could positive affect the air sector under a complementary perspective. Thus, should not Norwegian be the right strategic partner for somebody else? What is about AZ?

Even if the long-haul low-cost carriers (LHLCCs) still represent a thin slice of the market pie, Norwegian Group represents the most relevant phenomenon in this scenario. With more than 63% of the LHLCC market[22] between US and Europe, the entire low cost transatlantic landscape grew by +66% in seats availability[23] in August 2016-2017 (the most likely month for transatlantic flights), compared with LCCs which increased by +2% only. This is a very recent phenomenon and the
LHLCCs market share between EU and US is still marginal (5,5%) with respect to seasonal leisure

[22] 63% = 343 598 seats. All data refers to Sept. 2017 . Source: "*LCCs: is it for the long-haul?",* FlightGlobal, October 2017. [23] This means an increase by +200 000 available seats in August 2017 with respect to August 2016

flights (6,5%) and FSCs (88%)[21]. Supply and demand move the equilibrium. From a consumer perspective, it is not important who is adding the seats. The more you add, the more likely the price will decrease. Moreover, in 2017 Norwegian Airlines transported 33.15 mln pax worldwide, recording a +13% on 2016 (29.4 mln pax).

4. Short-medium haul: HSTs arise a new challenge

The HST role in the transport sector

In the last decade of 1800, US railways carried almost 2 billion passenger per year and this value doubled the number served in the rest of the world. This means that the second industrial revolution – from late XIX to beginning of XX century - created the right technology background which contributed towards widespread rail network, especially in US and Europe, which still exists nowadays. Then, between 1900 and 1930, more than 50% of US households bought cars (Lowe, 1994). With the air market development, long rail trips were gradually substituted by long haul flights. Although easily influenced, the way of travelling become only a customer's choice, according to their needs, budget, and time availability. Furthermore, from a traveller point of view, the switching cost in the short-medium hauls between flight and high-speed train (HST) has decreased: sometimes trains are even faster and more convenient due to a more high-speed rail (HSR) network[25].

[21] Author's elaboration based on FlightGlobal data (2018).

[25] See appendix V, VI for further details

HSR development and air transport provide a complementary opportunity together whether they are followed by appropriate investments in regular train service locally. Many HSTs, whose ideal routes' distance is from are fast enough to compete with air travel in 200 to 1000 kilometres, since move passengers directly downtown instead of wasting time to go to an airport. The *Shinkansen*, the Japanese bullet train, has almost completely displaced air travel between Nagoya and Tokyo. During the first ten years of *Train a Grande Vitess* (TGV) between Paris and Lyon, the number of rail passengers increased by 75%, while the same air route between the same two cities decreased by 48%. A remarkable consideration apart is the fact that some European airlines are lobbying for a more efficient rail service in order to free overloaded terminals of short-trip passengers (Lowe, 1994). But at the same time, once the rail system is implemented, this may result in a reverse effect for rail operators. Both it could result in carrying further travellers to airports without any route discrimination and, at the same time, in reducing rail passengers overall, especially in the case of short haul travels by HSTs

The European coopetition between HSTs and LCCs

LCCs are now expanding towards main city-closed airports rather than secondary airports, which were once preferred. In fact, this is related to the higher HST competition, which provides connections direct to city centres than in secondary airports (Moyano and Dobruszkes, 2017). In addition, there is a gap of 20% between current European rail trips and a potential higher quantitative. Thus, European railway passengers - international travels - are currently 6% only against a potential 25%. This means that 59 million EU rail passengers are still unserved in intraStates journeys every year[22]

Nowadays European international rail passenger development is still limited by different national regulatory backgrounds which cause *de facto* a fragmented network. Moreover, European institutions are still facing competitive issues about future intramodality projects (complementary transport operators) and the rail liberalisation scenario. In fact, as far as European policy is concerned, the *IV Railway Package* – over six - has the aim to deregulate European railways, creating the single rail market as known as *Single European Railway Area.* No more barriers across Member State would encourage a higher competition level and an expected decrease in tariffs. All of these effects may represent the next biggest challenge in the European transport sector.

Although the air market has revealed a continuous progressive growth since '90s with the only relevant delays in 2001 (Twin Towers attack) and 2008 (global financial crisis), the trend in the rail transport market has been stagnant for decades. In fact, the air transport sector is five times greater than rails in terms of kilometre-passengers (Dobruszkes, 2011).

Is there more competition or cooperation between airlines and railways today?

With a further focus on short-medium haul, where is the turnover between rails and plane as substitute goods? Keep in mind that today travellers are requested to spend more time through check-in and security control than 20 years ago when the air environment was different[23]. Moreover, flying for short – and even

[22] Data collected from Train2EU project and Royal HaskoningDHV, 2016

[23] Less security checks, less players in the market, less flights, less pax overall

medium – haul has become time consuming, especially for those who are willing to pay more and pretend an on-time service with a high-quality standard (business). In addition, many experts agree to compare rails and aircrafts on time travel. Today, a train journey lasts in proportion 1 hours to 3 hour (1:3) maximum to compete with airlines[24]. But this does not last anymore: in many recent cases, the cut-off is even higher, from four (1:4) to five hours[25] (1:5), depending on airport distances or other variables. There are many unpredictable variables that affect the overall travel time by plane. For this reason, some cases are thus presented:

- *London Stansted Airport* is 40 minutes far from London city by train: customer might know that some inconvenient could raise anytime along the travel time, such as traffic jam, car accidents, getting lost inside the airport– which is quite common - or security queues. On the other side, two new daily Eurostar (HST type) has been running nonstop [26] between London and Amsterdam since April 2018. This specific route is the second busiest in Europe, only after London and Dublin, according to LCCs market share. The greater the airport distance is from home, the higher will be the probability that passengers will be willing to switch to HST. This is the key factor in downtown to downtown HST attractiveness. Moreover, the Eurostar journey emits 80% less carbon than the equivalent flight. Therefore, under these circumstances, consumers may prefer switching to HST option.
- In 1991, the privately financed fund *Texas TGV Consortium* promoted the development of a high-speed rail to connect Huston to Dallas (+380 km). The economic forecast predicted a substitution of regional flights operated by SWA since '70s. As this project would have affected the company negatively, SWA forced the consortium to suspend any further funds by conducting an aggressive lobbying campaign. Thus, the Texas super train project collapsed. (Powell, 1995) This shows how *coopetion* case has failed since SWA and Texas TGV could have developed instead a complementary service together: they could enlarge the number of potential travellers to SWA airports by developing a more efficient network.
- Italy is the global leader in railway competition: the Italian market liberalisation has permitted the rising of *NTV S.p.A.* as a new second competitor, first case of an HST market fully liberalised worldwide. Under a further intermodality perspective, *NTV S.p.A* and *Cathay Pacific Airways* has recently secured a strategic alliance to provide lower and joint fares or free rental car to customers. Railway competition has a direct impact on aviation, since it splits the market share: the longest HST routes – from 4 to 6 hours - shows some evidence on how air transport is affected (Giuricin, 2017)

Furthermore, the rising of railway competition in Italy came together with the increase in LCC competitors, as described above. This phenomenon just follows both Alitalia's (AZ) economic crisis in 2008 and 2014. The number of passengers carried doubled the size of the Italian air transport market in the last fifteen years, especially thanks to the LCCs effect; in fact, the cost-oriented companies conquered half of the pie (50,9%) in 2017. After the two main AZ restructuring plans, the Italian carrier lost around 10 million passengers which were captured by the LCCs and HSTs. Following this scenario and after the failure of the AZ - AF

[24] According to Mark Smith, rail travel consultant at Seat61

[25] According to Guillaume Pepy, President of SNCF (French National Railway)

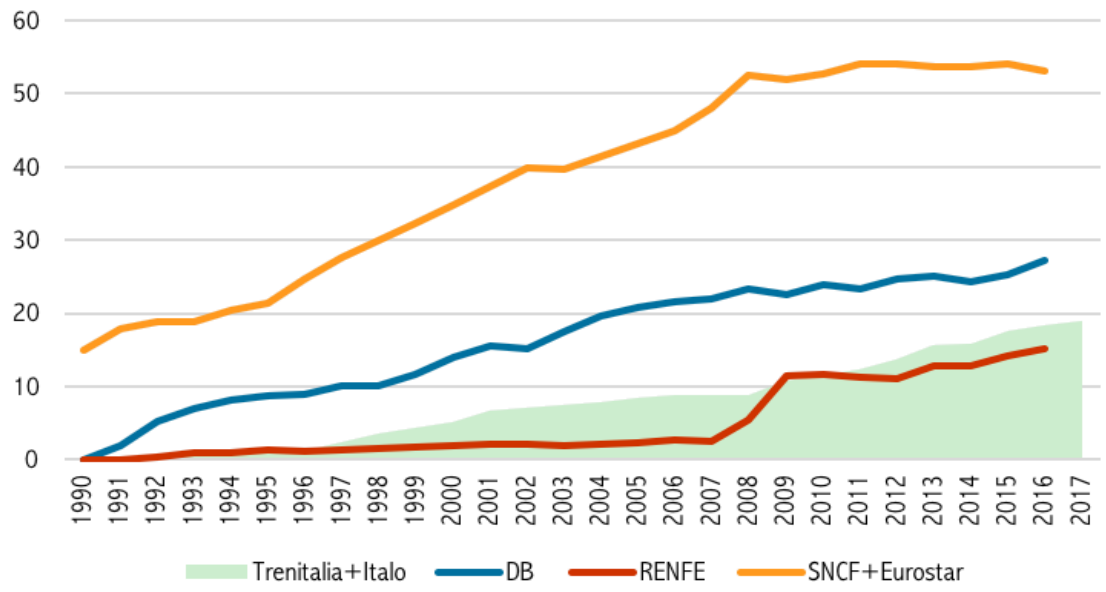
[26] Without a train change in Brussels – as a normal Eurostar does – more than one hour is saved

merger (2008), it is relevant to underline how the AZ management had controversial investments in the domestic air market within the contemporary development of HSTs and HSRs in the Italian rail network.

Although differences in transport environment required differences in operations management, the air and rail market are strictly linked with similar intermodal characteristics. The rising of privateowned Italo (NTV) as new rail competitor has caused a 35% loss in Ferrovie dello Stato S.p.A traffic volume, the state-owned Italian rail services and infrastructures provider. Furthermore, in addition to the LCCs relevant position, the domestic air competition has been affected by Air Italy new entry, the 49% Meridiana acquisition by Qatar Airways. Hence, since both Ferrovie and Alitalia have been subjected to a notable decrease in passengers, a temporary merger hypothesis may not be excluded then. On one side, Ferrovie may have economic interests in creating an intramodal network, considering the recent ANAS [27] acquisition too. On the other side, a temporary joint public administration could restore the AZ financial statement as well as increase the *made-in-Italy* brand perception in front of future buyers (Arrigo, 2018).

In Europe there are more than 9 000 km of high speed rails[28] (2017), where Italy (1000 km), German (1700 km), France (2 700 km) and Spain (+3 000) hold almost 90%. For what Italy concerns, here is the only current liberalised market where Trenitalia and NTV – entered in 2012 - compete together; in Italy the first HSR was also set in late 1977 between Rome and Florence.

Figure 4: HSTs passenger volume (bln passenger km)



Source: EU Commission, Transport Statistic Report (2017) and companies' data

Even though HSTs do not always use HSRs due to lack of network connectivity, data are collected on the total number of passengers carried without further distinction. *SNCF* (France), together with its subsidiary *Eurostar*, is the market leader with 54 bln passenger-km every year, followed by *Deutsche Banh* (Germany) with 27 bln and *Renfe Operadora* (Spain) with 14 bln. In Italy, the market has recorded a 34% increase in the

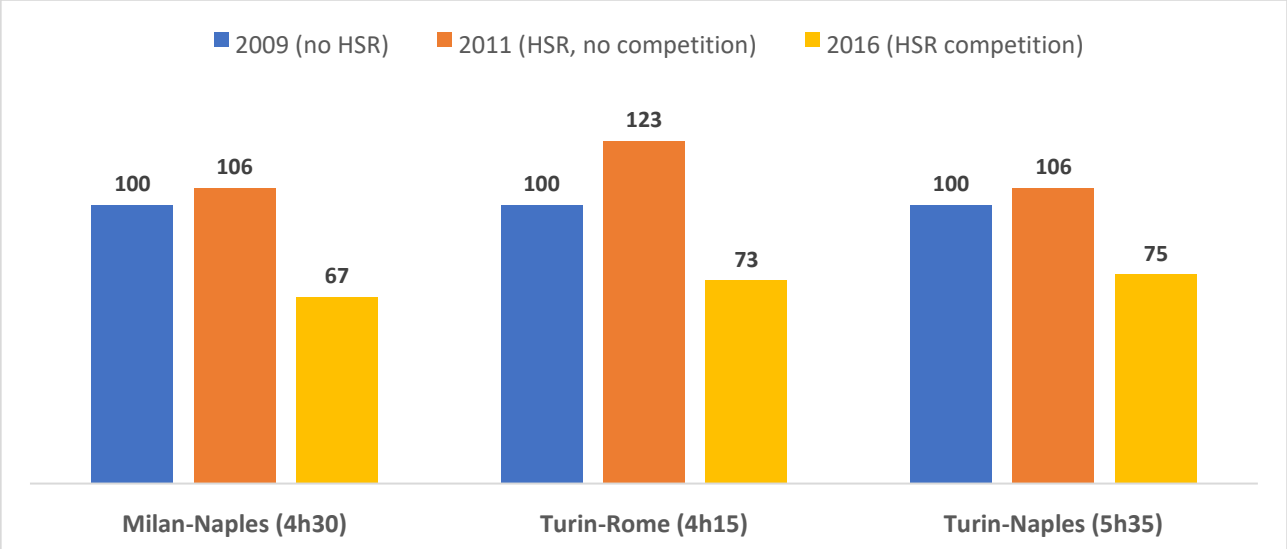
[27] "*ANAS enters FS Group*", Press Release, December 2017. ANAS is an Italian state-owned company for the construction and development of roads and highways.

[28] Length of lines where trains can go faster than 250 km/h. Europe survey, 2016

period 2012-2017 with an over than 19 billion passenger km in 2017.[29] Since 2012, the Italian growth rate has been greater than those in Germany and Spain. The positive trend has increased by 45%, from EUR 13,1 billion to expected EUR 19 billion in 2017 (Giuricin, 2017). With the 2020 rail liberalisation – the IV UE law package - other transport markets are expected to evolve within the rising of a spread new competition. Future studies on EU 2020 rail deregulation should focus on the future network development first and how it could affect the demand and supply curves.

Since 2012, the Italian new competitive market has permitted passengers to choose their way of transport: as told, HSTs and medium haul flights may now be considered as substitute goods in many Italian routes. The overall effect is a less cost per km paid by passengers. Trains are recording a higher load factor – more than 76% (Giuricin, 2016) – compared with airlines' standards (81,4%)[34].

Figure 5: How HSRs routes affected air transport demand in Italy (bln passenger km)



Source: Giuricin (2017)

The rising of this intra-sector competition has improved not only the demand side but also innovative investments and a higher quality service. Analysing the substitution role HSTs are recording in Italy, Giuricin (2017) has taken into consideration 2009, 2011 and 2016 air decreasing demand in some specific Italian routes. Under these criteria, 2016 collected a deeper market penetration for rail competition – since NTV has been operating since 2012. This emerges from the grey column: the air domestic demand has been negatively affected not only by new HSRs but also by the introduction of new competitors such as coaches (e.g. Flixbus). In 2009 – 2016, Milan – Naples air demand is decreased by 33%, Turin – Rome by 27% and Turin – Naples by 25%. More comfort, more competitive prices and geographical advantages as well as boarding time are the main key factors. Moreover, from a recent survey[35], it emerges that Wi-Fi accessibility has become a relevant variable for customer when choosing way of transport. It is not only a surplus service for consumers but also a brand differentiation in terms of competitive advantage.

[29] Since the market deregulation, Trenitalia stopped from spreading official transport data. HSTs traffic is divided as follows: NTV 5,3 bln, Trenitalia: 13,8 bln.

[34] Italian load factor (average). ENAC, Traffic Data 2017 (ed. 2018).

[35] 83% of passengers would take the provision of inflight Wi-Fi into account when choosing way of transport. EU Inflight Connectivity Survey, 2017

SECTION II – THE ALITALIA PARADOX

1. A controversial strategy

Same issues, old stories

The tremendous decline of AZ represents an inverse phenomenon in the air sector. What follows is a focus on the ambiguous strategy that Alitalia undertook in the last decade. The AZ weak financial situation is just a direct consequence of the inefficient management which lasted far too long. In fact, many studies have been conducted in order to obtain a better understand of the economic causes which affected AZ performance.

Above all, Bergamini et al. (2010) first emphasized how AZ productivity started declining from 1998 on, due to both internal and external variables. Using Total Factor Productivity (TFP) as main parameter for the evaluation of the slowdown, they find that the AZ competitive efficiency was negatively affected by the following factors:

- The rising of new competitors among LCCs and HSTs and of new modes of transport such as long haul coaches (Flixbus)
- The double hubs strategy: Rome Fiumicino (FCO) and Milano Malpensa (MXP). This second hub spotlighted the AZ anticompetitive tactics in the period 1998 – 2008;
- Systematic and controversial voices from different Italian political parties which changed overtime;
- A domestic-oriented strategy which followed the 2008 restructuring plan in contrast with AZ historical competitors (e.g. AirFrance, British Airways, Lufthansa, Iberia);
- High marginal operation cost followed by an insufficient revenue coverage;

Furthermore, Beria et al. (2016) explain how AZ has been subjected to ownership issues, lack of efficiency in cost controlling and controversial management such as hub or alliance strategies. The 2001 failed KLM merger has *de facto* forced AZ to resize its strategy to a secondary role. Such that it was mainly feeding service to FSCs companies in extra-EU flights. Regarding intra-EU flights, AZ position was reduced by the rising of LCCs. However, a MXP further development as well as KLM alliance could have sustained a stronger AZ expansion towards Northern American or Canadian air markets. In fact, transatlantic routes between

Europe and America has been subjected to a strong increase between 2012-2017. Non-stop different routes increased by 24%: from 347 in Summer 2012 to 431 in Summer 2017[30], with a net of +84 routes.

Since 2000, AZ has been subjected to various reductions. After the failure of KLM merger, a long haul-oriented strategy is strictly reduced at the same time as the second MXP international hub started operating simultaneously. In 2004, AZ was divided in aviation (*Alitalia Fly*) and ground handling (*Alitalia Service*) sectors. After 2008, following the failed AF merger attempt, new private Italian stakeholders further limited medium-long haul development, focusing on domestic market only – and just before the deregulation of domestic HSR market (i.e. NTV).

Two national hubs with similar business perspectives are not diffused in the air sector since they actually split the market, exposing the routes to higher competition or even duplication of short haul connections. This also leads to less profit margin. In some cases, however, two close hubs may be preferred whenever market differentiation is needed in terms of traffic or destinations, as American Airlines or the AF-KLM do. This is not the case of Alitalia or Italy neither.
From 2014, the 49% Etihad management tried offering a competitive restructuring plan on the long haul but, at the same time, it limited a deeper short haul network as well as the number of employees.
The results are known: AZ is under extraordinary administration since May 2017.

All of the causes above restricted a further AZ international expansion. It seems that AZ persisted in keeping its market position – in terms of a domestic oligopoly - instead of moving towards more profitable routes. It was not able to adapt to emerging trends in the last two decades because it did not operate neither as a FSC nor as LCC (or even LHLCCs). *The inefficiency*

As a result, AZ evolution in the last decade may be defined *neither fish nor fowl*. It did not compete with major airlines neither with LCCs at all. Just floating in this limbo. On one hand, following AZ restructuring plans, Trenitalia and NTV have benefited from a domestic point of view. Since 2007, HST competition and HSR development have been attracting more than 3 million travellers in the domestic market. On the other hand, some oversea domestic routes could attract more air competitors - i.e. from Milan/Rome to Sicily/Sardinia or in the South of Italy where an efficient rail network is still missing due to geopolitical reasons. Nevertheless, in some routes AZ still holds a monopolistic position[37]. Thus, in case of AZ insolvency, almost 3 million passengers would choose other (LCCs) competitors such as Ryanair, EasyJet, Wizz Air. In particular, an estimated 12,4% AZ current pax who will move to other competitors the next day.

From an international point of view, AZ holds a secondary role in its alliances *Sky Team*, following the drastic reduction in its long haul development. The natural consequences should be then to renegotiate its contracts in order to change the original equilibria inside Sky Team alliance. A stronger agreement within Delta and AF-KLM would especially enforce AZ role, mostly in the North American market.

[37] Cagliari (CAG) – Milano Linate (LIN): 315 500 pax
Cagliari (CAG) – Roma Fiumicino (FCO): 467 900 pax
Lamezia Terme (LICA) – Roma Fiumicino (FCO): 256 100 pax

[30] In the same period (2012-2017) North America (without Mexico) and Asia has increased their air network by 91 aircrafts in 2012 to 138 in S2017 (+ 47 routes). AnnaAero Consulting, Report 2017

Catania (CAT) – Milano Linate (LIN): 295 900 pax
Total: 1 336 000. Data has to be double (= 2 672 000 total pax), since domestic routes imply round trips. Source: ENAC, Traffic Data 2017 (ed. 2018)

We don't have an extensive network of domestic flights competing against low-cost carriers, and we don't want to compete with those. Our direct competitors are other international airlines[31] *- Marco Rigotti, Air Italy VicePresident*

Moreover, today 2018 AZ sale is slowing down caused by a political impasse: possible buyers are balking thanks to the political cul-de-sac that followed April 2018 inconclusive election. The country's two leading parties, Lega and Five Star Movement (M5S), have both expressed reservations about selling the carrier to foreign possible buyers. At the moment, the sale process seems to stop, since bidders might wait for a more stabilized political environment.[32]

In the Italian background, Qatar Airways has recently acquired 49% of Meridiana Airlines, forming the new Air Italy. The 49% limit is required by EU Treaties, since Qatar is not a European airline; without the majority of EU ownership the airline would be excluded from the open skies agreements and its traffic rights would be curtailed.

Fleet analysis

On June 2018, AZ fleet is composed by 118 aircrafts[33]:

- 26 long hauls (22%): 12 B777 + 14 A330
- 72 medium hauls (61%): 12 A321 + 38 A320 + 22 A319
- 20 short hauls (17%): 5 E190 + 15 E175

The percentage distribution above is out of any competitive airline view. Just for a comparison, in 1972 AZ operated within 29 long haul aircrafts with 1/10 of the current air market size (Arrigo et al., 2018).

Moreover, AZ presents a rare case of fleet heterogeneity. This is not only the case of medium haul aircrafts but also of long haul ones. More precisely, for what medium haul concerns, A320 used by AZ are divided into two models. There are 10 Airbus 320-214 and 28 Airbus 320-216. Most of A320216 are equipped with CFM56 5B6 family engines generally used on older A319. This engine has a thrust set at 23,500 Libre (= 100 kN) against the 27,000 Libre (= 120 kN) of the more efficient CFM56 5B4 engine family, normally equipped on A320. There is a relevant gap in terms of thrust power: the 5B6 engines have a lower angular coefficient of climb so they take more time to reach the maximum cruising altitude, resulting in higher fuel consumption and higher costs[34].

For what long haul model Boeing 777 concerns, AZ Commissioners decided to lease one B777-300 in the fleet last 2017[35]. This aircraft differs from the other 11 AZ B777-200 - mostly in terms of seat capability (382

[31] Meaning: let Alitalia compete with Ryanair for price passengers, Air Italy is going to fight against major FSCs, attracting that kind of travellers. AirItaly is 51% of AliSarda (today: Meridiana) which is fully owned by the Aga Khan Fund for Economic Development.

[32] Posaner and Zampano, "*Italian politics undermines Alitalia sales efforts*", from politico.eu, 10 April 2018

[33] According to the most recent update (June 2018). Data are taken from *azfleet.info*

[34] Intrieri, G. (2018), "*Alitalia in Extraordinary Administration: Analysis of the Report presented by the Board of Commissioners to the Special Commission for Urgent Acts of the Italian Senate*", independent consultation on www.giannidragoni.it

[35] Delivered on 13 April 2017, first pax flight on 7 December 2017. Source: *www.azfleet.info*

vs 293 pax). Different seat configurations prevent AZ not only from taking advantage of economies of scale but also from using different aircrafts as backup in case of any malfunction or unexpected further accident (e.g. birdstrikes) occurred to the B777-300.

Hence, AZ should renovate its fleet, especially enlarging the number of its long hauls aircrafts. This would require high investments and a long run strategy. At the , AZ does not have neither of them.

The question is not how far AZ will manage to keep its global competitiveness among other EU carriers. But, how long AZ will float in the market before being unable to guarantee further operations. Hence, as time passes its business attractiveness – i.e. economic value - is decreasing in front of potential bidders.

In conclusion, a different AZ business structure would have focused on a specific long haul development as well as efficient investments. This is what other European major carriers did. Instead of compensating AZ financial losses by multiple State aids, a more efficient management would have permitted the company to achieve a relevant position on international scale.

According to Arrigo (2018), a greater and more efficient long haul fleet would have increased the current inbound tourist flow and its overall expenditure. The gap between Italian and Spanish touristic expenditure has caused almost a EUR 9 bln loss in terms of tax revenues. This is an amount which would have allowed AZ to buy – not to lease – a larger number of aircrafts.

Table 1: AZ operation expense ratio (OER) 2015 - 2018

	2015	**2016**	**2017**	**2018 est.**
Revenues	*3254*	*2880*	*2915*	*3040*
Costs	*3403*	*3299*	*3228*	*3330*
EBIT	*-149*	*-419*	*-313*	*-290*
OER	*1,05*	*1,15*	*1,11*	*1,09*

Source: Data are based on Arrigo et al. (2018) and "Audizione Commissari Straordinari, Commissione Speciale del Senato della Repubblica" (17 May 2018). Author's elaboration based on proportional estimation calculated both on operation costs and revenues in the period 2015 - 1 trim 2018. According to air transport demand, first trimester is the lowest season of the year.

The operation expense ratio (OER) is an airline performance indicator that shows the ability to make profit from operations, excluding taxes and interests. It is obtained by dividing operation costs and revenues gained from operations; more than 80% revenues are generated by selling tickets to future passengers. It does not include financial gains or expenses reported in the income statement. If the value of the ratio exceeds 1, this means that costs are higher than revenues, while a low value indicates profitable operations. The lower the value, the better the performance and the financial statement. The data above has been calculated within the 1 trimester trends of 2018

2. Why AZ needs a new strategic model

The role of innovation in the air market

Airline industry is characterized by low marginal profit and high fixed costs which are subjected to many unpredictable external factors: they could negatively affect the demand side and so record a reduction in revenues. E.g. jet fuel cost, seasonality of demands, new market entries, adoption or revision of regulations, air crashes, terrorist attacks or natural disasters. All of these factors influence both travel demand and ticket price.

In addition, air market is technology driven too: aircrafts are subject to continuous improvements in security standards, boarding procedures, fuel efficiency or travel time. According to Airbus[36], air technological changes provide advantages for all stakeholders – operations, maintenance or manufacturing. Such benefits are e.g. the fly-by-wire recent implementation, a more efficient air traffic management, the development of new more reliable cockpits that improve pilots' monitoring, etc.

One step aside, the term innovation deserves a brief excursus itself. Since the old centuries, the term *innovation* means something unusual. According to Schumpeter (1942), the father of innovation's theory, consumer preferences are always taken for given and do not arise spontaneously. This means that they cannot be the cause behind any economic change and, therefore, consumers play a passive role in any process of economic development. Innovation can be creator or destroyer of enterprises and entire industries. Schumpeter first theorised the disruptive role of technological transformation, observing that it could lead to waves of *creative destruction*. According to Schumpeter, innovations were considered a broader sense of new arrangements of producers and means of production.

As a matter of fact, capitalist economy is not and cannot be stationary. Nor is it merely expanding in a steady manner. It is incessantly being revolutionized from within by new enterprise, i.e., by the intrusion of new commodities or new methods of production or new commercial opportunities into the industrial structure as it exists at any moment. Any existing structures and all the conditions of doing business are always in a process of change.

Joseph Schumpeter, *Capitalism, Socialism and Democracy,* 1942

The economic development is the result of discontinuous technological changes. Thanks to discontinuity, innovation can reach new peaks every wave. The disruptive nature of previous technological change could cause further waves of such *creative destruction*.
In the recent aviation history, this has been the case of many disruptive events such as:

- The *Fly-by-Wire* system implemented by Airbus. The European aircraft manufacturing company was born in the '70s to compete against the American Boeing monopoly. It developed an innovative electronic interface in the cockpit. Thanks to the electronic signals, in emergency cases computers could interact without any pilot input and so preventing unsafe operations by stabilizing the aircraft[37];

[36] "*Technology and Innovation*" from *airbus.com/aircraft/passenger-aircraft/technology-innovation.html* (last visit: June 2018)

[37] The fly-by-wire system first recognise pilot's input as the required aircraft action. According to the situation required, it acts with different rudder elevations, flaps and engine controls at once using a closed loop. It can also react to unpredictable situations, as described.

- The *halved jet fuel* consumption in the last 3 decades. It decreased from 8 litres per pax/100km (1985) to 4 litres per pax/100km (2015)[38], ensuring not only a cost reduction and higher efficiency but also a stronger pollution awareness;
- The *commercial supersonic flights* which operated from 1976 to 2003. Thanks to *Concorde*, the air market was affected by a tremendous reduction in flight time – from Paris to New York in 3,5 hours. Unfortunately, the program was suspended due to high operating costs as well as the drastic decrease in number of passengers after the 25 July 2000 crash;
- The futuristic *LAPCAT II* is an European project started in 2008, focusing on the feasible development of commercial hypersonic aircraft which would eventually operate at Mach 5 (more than 6 000 km/h). The study has been co-financed with EUR 10 mln by the European Commission and other 16 partners such as European Space Agency, the universities of Oxford, Southampton (UK) and La Sapienza (Rome, Italy).

And what happens now?

Carriers operate under multiple unreliable conditions, both from a geographical and temporal point of views. Although they have to strengthen or enlarge their competitive advantage, there are a few carriers which fail in adapting to emerging trends. For many reasons they are unable to keep their market share constant or greater.

The logical fate of these carriers would be bankruptcy, mergers, acquisition or asset sales, depending on the seriousness of their financial status. This happens when a carrier is unable to sustain further operations and therefore decides to keep aircrafts on ground. According to air transport management, class actions are often undertaken by consumers in order to be refunded after buying tickets, since these are sold before the service (i.e. flight) is provided. Therefore, carriers receive cash before their operation performance facing an economic debt towards passengers.

It can happen that a company fails not only because of a dramatic reduction in the number of passengers due to market unpredictability but also because of controversial managerial decisions in terms of strategies, alliances, or acquisition. On one hand, many FSCs have progressively switched their core business from a domestic/Europe oriented strategy to a long haul preferred one, whose routes are still not hold by LCCs compared proportionally with the continental market.

On the other hand, the short-medium haul has been subjected to an overall increase in competition from both LCCs new entries and HSR companies. It must be considered as consequence of the European liberalisation.

The following lines will analyse the reasons why Alitalia has been subjected to a tremendous passengers' decrease in recent years as well as continuous financial crisis which has affected its economic growth.

Is AZ essential in the sky? An Italian gap

First, in order to better understand AZ role in the market, a comparison of countries where similar carriers operate is needed.

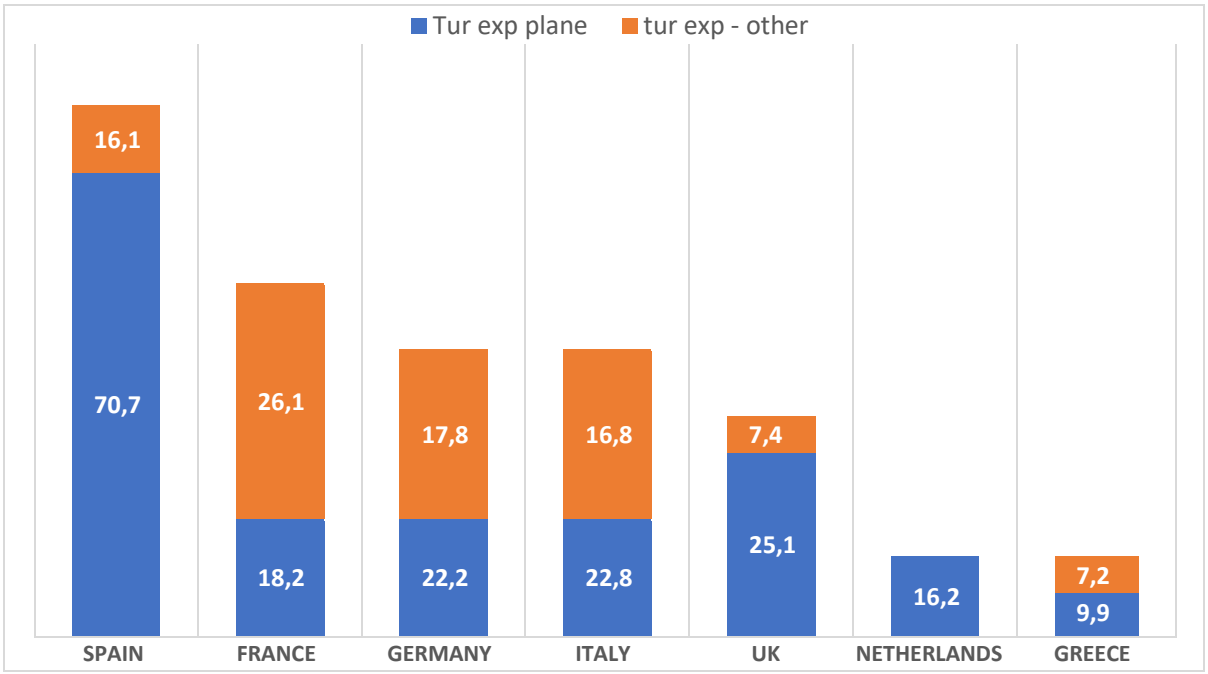
[38] International Coordinating Council of Aerospace Industries Association (ICCAIA), 2015

As described above, Italian air market is less developed compared with other EU similar countries. Although, Italy is the 3rd European country in terms of international tourist arrivals,[39] the revenue of non-domestic travellers represents only the 58% over the total tourist expenditure. Why cannot Italy be as profitable as Spain which has a similar attractiveness?

In order to proof that Italy is in a misleading situation, the World Economic Forum publishes yearly a report where Tourism Competitiveness Index lists 136 countries according to some specific parameters. The ranking is based on specific policies and factors which "*enable the sustainable development of the travel and tourism sector, which in turn, contributes to the development and competitiveness of a country*[40]". The 2017 WEE Report lists Italy at 8th place, 5th considering European countries only, although Italy is 3rd in terms of touristic arrivals in Europe. The following table sums up an elaboration about the European air scenario, analysing tourist expenditure.

As you can see from the graph (Fig. 10), Spain is the European country with the highest tourism expenditure. This because, after France (82,6 mln tourists), it is the second most desired touristic destinations in Europe, with 81,8 mln tourists in 2017. The most surprising fact is that the tourism expenditure in Spain is double the average size of the sample analysed[48]. Instead, France, Italy and Germany have similar values due to different reasons. For what concerns inbound tourism to France, 49% comes by HSRs, 34% by plane (with 18% extra-EU travellers), 15% by car. On the contrary, Germany has a smaller number of tourists overall, who almost have a double expenditure level compared with those in France and Italy, although Germans are willing to pay more when travelling abroad.[41]

Figure 6: inbound tourist expenditure: a comparison among main EU countries



[39] World Tourism Organisation (UNWTO), 2017

[40] World Economic Forum, Travel and Tourism Competitiveness. Report 2017

[48] Countries analysed are France, Germany, Greece, Italy, Netherland, Spain, UK.

[41] Germany 72.1, UK 58.4, France 36.5 bln. Source: Eurostat, Tourism statistics (2016)

Source: Author's elaboration based on based on Aeropuertos Españoles y Navegación Aérea (AENA), World Tourism Organization (UNWTO), Banca d'Italia, EuroStat. Note: Data refers to 2017/2018 and are expressed in billion (EUR), assuming proportional expenditures between air tourists and total tourists. See appendix VII for further details.

Italy has a lack of direct intercontinental flights, although it is the 5th worldwide destination, and so it contributes in enlarging the expenditure gap of inbound tourists. For example, in 2017 more than 80% international tourists came to Spain by plane: they spent EUR 86,8 bln on the whole comparing to France (44,3), Germany (40,0), Italy (39,6) and UK (34,5).

This value exceeds the EUR 39,6 bln in Italy, although it recorded 60 mln tourists in 2017. So, values are not proportional with the Spanish case. In fact, Spain exceeds Italy by more than EUR 47 bln. So, if we assume a 20% tax withholding, we obtain EUR 9,4 bln further revenue which Spain collected in 2017 with respect to Italy. Spain's success is due to its natural and cultural resources as well as an efficient development in accommodation services and transport infrastructures, airports and HSRs included. This financial gap is higher than the amount which the Italian government spent to save AZ from its default situations.

The double effect is that on one hand, AZ financial situations have largely contributed to the decreasing in Italian air attractiveness, under a long haul expansion perspective. AZ economic weakness has definitely caused a slower air market expansion in Italy, although it has the strongest HSRs competition in Europe at all. On the other hand, AZ has limited a long haul strategy at least three times, in 2000, 2009 and 2015. Thus, a positive balance sheet as well as right strategic investments – such as unfair leasing option or fuel hedging contracts – would have avoided the current risk of insolvency.

3. Latest trends

A comparative approach

In fact, since LCCs penetration in Italy is recording a relevant positive trend as described, the most suitable countries for a comparison are UK and Spain, considered EU sky pioneers.

Eastern Europe should be excluded since they never had larger major carriers and only recent LCCs entries permitted to develop a deeper air network from/to those countries[42]. No comparison is possible due to their different characteristics in the historical air development.

In addition, Germany and France can be excluded too because of different market characteristics: both of them have a smaller LCCs penetration (1/3 in France and ¼ in Germany) in favor of major FSCs – AF-KLM and Lufthansa – which still detain the majority of the market share. Furthermore, they have higher yields - average fare per passenger per mile - than other carriers and, thus, they can sustain higher fixed costs. Due to deep differences in the markets, they cannot be compared with Italy.

United Kingdom

UK and Ireland have been the pioneer of EU liberalisation thanks to Ryanair and EasyJet rising and the privatisation of British Airways (today: IAG group). Therefore, an advanced competition and a positive regulatory background have made UK the birthplace of EU liberalization and LCCs, thanks to Ryanair and EasyJet. Furthermore, British Airways has mainly adapted a long-haul business strategy after its

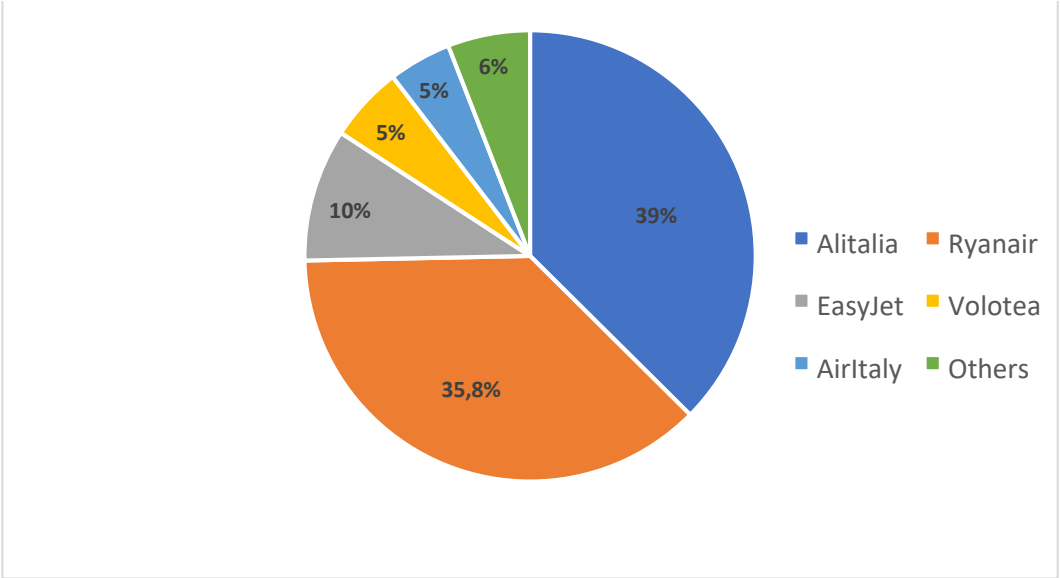
[42] This is the case of Slovakia, Hungary, Romania, Lithuania.

privatization. Nowadays, Heathrow airport is one of the most strategic airports in transatlantic routes, UE-North America *in primis*. Thus, a robust legal framework, early competition, FSC on the long-haul, and the largest European airport are the main key factors which has made English sky so profitable.

Spain

Although Spain is ¾ smaller than Italy, it has a larger air market - 195 vs 130 mln pax considering two domestic routes as one passenger carried – and there are multiple reasons. Here, Iberia has transported 18 mln pax compared with Alitalia which had 22 mln in 2017. Furthermore, ¼ pax were carried by the wholly-owned subsidiary Iberia Express, which operates in the short-medium haul only and works as feeder service for Iberia. In addition, the LCC Vueling has transported 23 million pax. All together, these Spanish carriers have transported 41 million pax in 2017 – more than 20% of the total Spanish market (domestic + international). This scenario shows how an efficient competition between LCC and FSC is possible, even under the same market conditions. They could operate in a fair competitive market with a similar air environment, contrary to Alitalia case. LCCs and FSCs have made Spanish routes so attractive thanks to tourism flows mainly from Germany and UK. Although their limited market shares due to high levels of competition, Spanish carriers are recording positive balance sheets every year. This shows how the right market segment as well as efficiency in network development lead to sustainable cost reduction and so to profits.

Figure 7: Distribution of Italian domestic air traffic by number of passengers (2017)



Source: author's elaboration based on ENAC, AdR, SEA data (ed. 2018)

In conclusion, AZ weaknesses between default exposure and the scarcity of long haul connections have negatively affected inbound tourism flow to Italy: tourists are less willing to spend further time and so reduce their budget spending in this country. Arrigo et al. (2018) estimated that 1:3 inbound tourists came to Italy by direct international flights, while 2:3 used at least one stopover. In the case of a more optimistic scenario, this ratio would be more convenient, leading to an increase in the inbound tourism expenditure in Italy. In case AZ would disappear because of insolvency, there would be an enormous economic domestic gap to be restored, instead. The AZ 39% domestic share (Fig. 11) would be absorbed

by current or future competitors. In addition, also the HSRs would benefit from an overall increase in passenger demand.

The bidders

In 2014 Etihad Airways, the second largest United Arab Emirates airline, took a AZ 49% stakes, with the aim to reorganize it by cutting cost and increasing its international role. This plan failed after trade unions consultation refused the proposal. From 1st May 2017, AZ went into extraordinary administration in order to guarantee operations in the bankruptcy process.

EasyJet has currently shown its interest in the *aviation* division of Alitalia[43]. The low cost EasyJet is the second largest carrier in the Italian market and it is the major airline on Malpensa Airport Terminal 2. On December 2017, it announced that it has generated 21% of the all of its pax traffic in Italy, with the aim to generate +8% in ASK in current 2018 (+3 planes and Genova and Ancona as new airports).

Cerberus[44] – in addition to the EasyJet bid, a further hypothesis would be a joint consortium composed also of Delta Airlines (US carrier) and the private equity firm Cerberus. Since it is an extraEU offer – although submitted after the official requested deadline – it should eventually hold at maximum 49% AZ equity stake, according to the European Union rules. So, this would require an European company. Under this scenario, the joint consortium would acquire both division, aviation and ground handling services, which would result in 100 / 400 mln offer. By the way, the American fund has already saved Air Canada from bankruptcy in 2004. Some media reports a further involvement of Air France-KLM[45]

EasyJet has renewed is position on April 2018 with an official statement concerning Alitalia acquisition:

EasyJet has submitted a revised expression of interest for a restructured Alitalia, together as part of a consortium, consistent with easyJet's existing strategy for Italy. There is no certainty at this stage that any transaction will proceed and easyJet will provide a further update in due course if and when appropriate.

Does EasyJet *consortium* mean a Cerberus implication?

Lufthansa – at the moment, its offer regards the aviation division only, and, according to many media[46], it may offer EUR 300/500 mln. The German carrier, however, asks Alitalia[47] to receive guarantees on debts and employees before proceeding with further contractual procedures. Expected redundancies should be at least 2000, over the total current 8400 in the aviation staff . On the other side, Lufthansa has apparently declared its lack of interest about ground handling service. If the German carrier acquired AZ, we would not simply talk about an acquisition. This would be a transfer of assets instead, from an insolvent airline to a strong efficient carrier, almost holding a dominant position in its domestic market. Lufthansa is currently the Europe's largest airline in terms of passenger numbers (2017).

[43] Katz et al, "*Embattled Alitalia Attracts Approaches from EasyJet, Lufthansa*" from Bloomberg.com, 10 April 2018

[44] Cerberus manage over $ 30 billion for many of the world's most important investors, including government, retirement funds, charitable foundations and university endowments or insurance companies.

[45] Pogliotti G., "*AirFrance-Klm, EasyJet, Delta e Cerberus: maxi-alleanza per acquistare Alitalia*" from ilsole24ore.com, 15 Feb 2018

[46] Wissenbach Ilona, "*Lufthansa CEO calls for significant Alitalia cuts*" from reuters.com, Jen 2018

[47] AZ is currently controlled by the State through the extraordinary administration management which has the aim to sell the Italian carrier at its best value or to attract investments, both public or private funds.

The European Commission investigation

On April 2018, the European Commission opened an official investigation into Italian State loan on the AZ status. According to the European Treaties, any State aid provided by a Member State is forbidden under art. 107 (TFUE) except those which are allowed under certain exceptions. Through this measure, the European institution need to define whether the EUR 900 mln loan granted by the Italian government in 2017 is in line with EU rules or not. 2014/C 249/01 European Commission guidelines on rescue and restructuring aid[48] states that:

Rescue aid is by nature urgent and temporary assistance. Its primary objective is to make it possible to keep an ailing undertaking afloat for the short time needed to work out a restructuring or liquidation plan. The general principle is that rescue aid makes it possible to provide temporary support to an undertaking facing a serious deterioration of its financial situation, involving an acute liquidity crisis or technical insolvency. Such temporary support should allow time to analyse the circumstances which gave rise to the difficulties and to develop an appropriate plan to remedy those difficulties.

It is not the first time that the Commission investigates on Alitalia State aid. In the privatization process (2008), the Commission stated that the EUR 300 mln state aid given by the Italian government constituted an unfair loan according to European Treaties. Although AZ was asked to give it back, the repayment never took place since the amount were changed into own capital in the meanwhile. However, two aspects emerge from the EU investigation.

1) The duration of the loan should not exceed six months
2) The amount of the loan should not be larger than what is needed Does the AZ

2017 loan constitute an unfair State aid?

Although there will not be further official releases by the Commission until the final statement, some deductions may be useful. Therefore, according to the Commission guidelines, it is likely that the State loan might constitute an unfair State aid since the duration exceeds the maximum period of six months established by the Treaties and the amount compared with the effective necessities of the airline. For example, a fair and regular State aid approved by the Commission was the German rescue aid to Air Berlin in September 2017. It was made by EUR 200 mln with 3 months as deadline.

In conclusion, if the loans will be considered an unfair state aid, the future buyer would be asked to repay the money only if commission officials determine whether there is an economic continuity between AZ and the new ownership. This legal turnover would consider some factors such as the scope of the assets sold, the price, the buyers and the economic weight of the operation. Even if the Commission statement is expected to come out before October 2018, there is no official deadline to complete the investigation instead.

[48] Communication from the European Commission, "*Guidelines on State aid for rescuing and restructuring non-financial undertakings in difficulty*", Official Journal of the European Union, 2014/C 249/01.

CONCLUSION

Although air economic forecasts are still positive related to 2018, higher costs could affect the air market in the near future, especially regarding fuel hedging. This is because market externalities have direct effects on airline costs, and so on profits. According to this scenario, 2018 air transport demand is expected to be lower than 2017 due to the relevant increase in oil prices which recorded +49,5% between 30st June 2017 (49,5$) and 30st June 2018 (74,14$)[49].

Besides that, US and Europe had opposite air trend results in the last two decades: following the air liberalisation, American flights had a stronger domestic expansion due to high consumer purchasing power as well as wider geographical distances. Europe, on the other side, had a stronger intra-EU development thanks to the Europe structure itself. In addition, further requirements were a monopolistic position and state-ownership. However, as time passed, privatisation was essential to keep competitive shares among major FSCs: British Airways went private in 1987, Lufthansa in 1995, Air France between 1999 and 2004 and Alitalia in 2008.

The definition of flag carriers is nowadays under debate although they are increasing outbound and inbound touristic flows. Moreover, the status of flag carrier is called into question for what short/medium haul concerns. In fact, it has been subjected to external market changes – HSTs new competition *in primis* - which have imposed airlines adapt their strategic directions.

However, under a long haul strategic perspective, bilateral agreements are essential to operate between extra-EU countries and Member States. Whatever will be the destiny of AZ, the meaning of flag carrier will matter for extra-UE operations. While all European carriers can operate inside EU borders with no limits, open sky agreements put some criteria in the global expansions[50]. This means that, each carrier must meet specific requirements such as its National flag over its aircrafts and an exclusive permission specifically granted by the open sky agreements. Otherwise, it cannot operate intercontinental flights. Therefore, the flag carrier distinction still holds.

For what AZ case concerns, there are some specific consequences in case of future acquisition, since these rights are transferable. Whoever acquires AZ will immediately obtain also its open sky agreements from Italy to extra-EU countries. The potential buyer can then decide to benefit from them or not, according to its business strategy.

Under these market assumptions, the present study suggested a radical change in AZ business model. In order to maximize its bargaining power, which is currently so thin in front of possible bidders, AZ should move towards this specific direction. An optimal strategy would be to split its operations in two parts in order to have a better and more efficient control over them.

A low cost business structure for short/medium haul flights would make AZ better compete with the LCCs which have taken a significant market share of its regional routes. A further optimistic choice would consider creating a subsidiary which could operate at its best. Then, assets need to be reorganised in order to have a price oriented market strategy. There are many FSCs which have created their own subsidiaries, splitting

[49] Source: WTI Oil Price Chart

[50] With the exception of US, Canada, Morocco, Israel where open sky agreements permit no limit operations

their fleet according to low cost traveller's demand. For example, Joon is a subsidiary of Air France - started operating in December 2017 – with the specific aim to make young travellers afford also long haul trips. Basically, this means that Air France wants to compete not only with LCCs when feeding travellers to its main hubs but also with LHLCCs, since Joon's destinations coincide with most popular leisure destinations. AZ, instead, should mostly operate domestic and intra-EU flights not only to compete with LCCs but also for a more efficient feeder service to its hub.

A wider long haul oriented strategy would permit to increase marginal profit in the long run and so, its competitiveness. A partial State-ownership should not be excluded. However, the majority of shares and assets should be owned by a private investor. The best scenario would be an AZ merger with another major European airline which specifically need further open sky agreements to build a stronger air network. In case the bidder would already have a long haul fleet - better saying not in leasing - this would be a surplus and guarantee a stronger competitive advantage for both carriers. There is a saying in Italian: "*chi ha il pane non ha i denti, chi ha i denti non ha il pane*" that translated into English would result in having the means but not the know-how. Under this scenario, a quality oriented business structure would strengthen AZ brand identity as well as its perceived core value.

Normally, state-owned enterprises are moved by political influence, since these are financed by public expenditures and national interests. The AZ case has been subjected to different political decisions, according to the colour of the ruling party at that time. It seems likely that the current Italian government (Prime Minister: G. Conte) supports the idea to rediscuss the sale process, focusing on a new AZ revaluation and eventually a public shareholding. This contrasts with the view of the last government (Prime Minister: P. Gentiloni) which preferred a faster sale process.

Moreover, possible bidders have expressed the intention to reduce workforce - by layoffs and unemployment benefits - and to limit a further long haul expansion which otherwise would lead to some conflicts of interest in the network implementation. In case of AZ acquisition by Air France or Lufthansa, it is certain that the Italian carriers would operate a feeder marginal role, as Air Dolomiti does with Lufthansa Group nowadays.

Instead, from the consumer perspective, the demand side is expected to benefit of fares reduction, at least in the domestic market. In fact, a LCCs race to the bottom is expected to expand domestic competition, in case of AZ default or restructuring.

Although the worst scenario would cause the dismemberment of the AZ core structure, based on aviation and ground handling or on the haul differentiation, a solid recovery plan would at least positively affect AZ brand perception – since *made in Italy* - as well as its economic value. This would occur both in case of a selling process or further situations. For sure, LCCs are ready to cut AZ domestic shares as they did in 2008, when 12 mln passengers were subtracted. But this time, we talk about 21 mln overall, both domestic and international flights.

APPENDIX

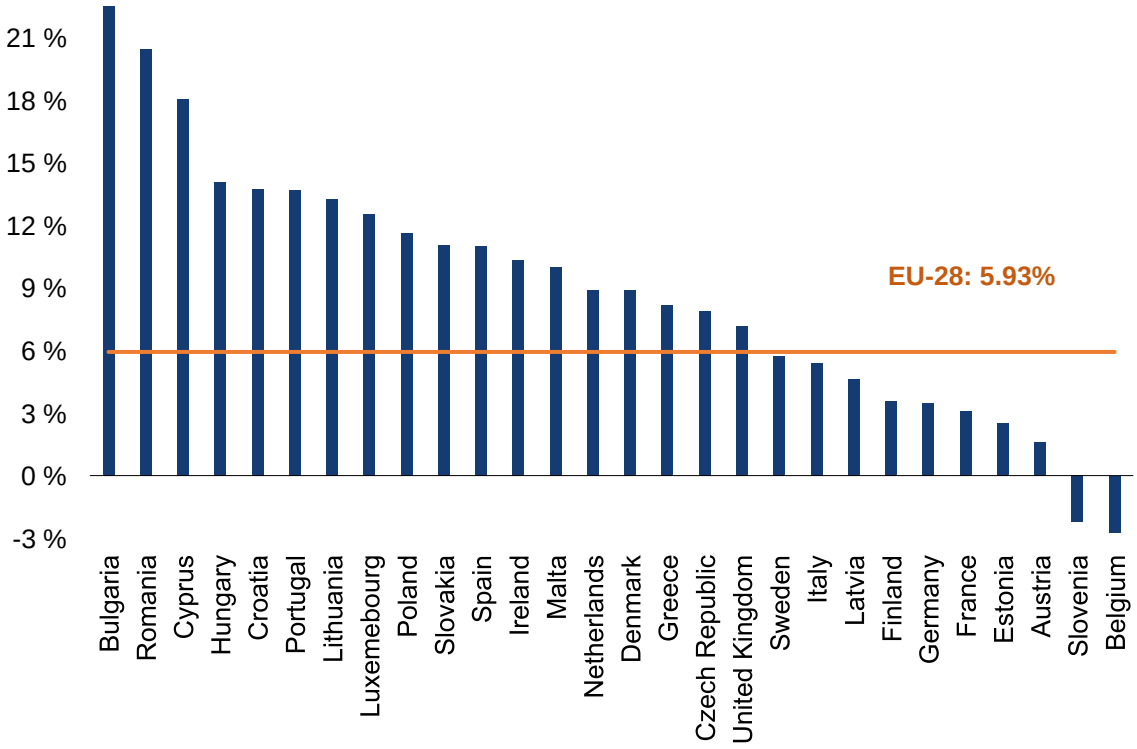
I. TOP 10 Italian Airport by pax number in 2017

Airport	Passenger	Δ 2016/2017	Share
Roma Fiumicino	40.841	-1,8%	23,4%
Milano Malpensa	22.037	14,1%	12,6%
Bergamo	12.231	10,6%	7,0%
Venezia	10.283	7,7%	5,9%

Milano Linate	9.503	-1,4%	5,4%
Catania	9.028	15,3%	5,2%
Napoli	8.552	26,6%	4,9%
Bologna	8.182	6,8%	4,7%
Roma Ciampino	5.885	9,1%	3,4%
Palermo	5.753	8,3%	3,3%
overall	*132.295*		*75,8%*

Source: author's elaboration from ENAC, Traffic Data 2017 (ed. 2018)

II. 2015-2016 growth in total air passengers carried by Member State



Source: Eurostat Report, Transport Statistics (2017)

III. European seat capacity by country (2002-2017) and LCC share

	Capacity growth 2002-2017		Growth coming from LCCs		LCC share		
Country	Seats	%	Seats	% of capacity growth	2002 (%)	2017 (%)	% point increase
UK	53,259,970	98	48,300,710	91	23	57	33
Spain	52,181,790	165	43,904,467	84	9	56	47
Germany	38,864,946	74	27,252,008	70	3	32	28
Italy	30,834,874	121	28,220,064	92	10	55	45
Turkey	20,170,012	336	5,001,263	25	0	19	19
France	16,606,367	54	19,145,867	115	7	45	38
Netherlands	15,231,702	91	9,344,112	61	16	37	22
Poland	14,490,821	460	10,344,525	71	0	59	59
Portugal	13,620,805	193	9,802,672	72	5	49	44
Switzerland	11,487,513	71	7,933,063	69	8	33	26
Greece	9,972,654	127	5,231,977	52	3	31	28
Ireland	8,749,536	99	5,967,638	68	35	52	16
Romania	7,895,606	399	4,778,238	61	0	48	48
Sweden	7,738,477	85	3,450,513	45	5	23	18
Norway	7,418,417	126	2,709,299	37	4	22	18
Austria	6,996,736	78	2,918,852	42	3	20	17
Denmark	6,132,410	55	4,837,215	79	2	29	27
Belgium	6,028,337	57	5,061,651	84	9	36	27
Czech Republic	3,821,667	97	2,228,388	58	5	31	26
Finland	3,472,135	70	1,054,003	30	0	12	12
Grand Total	**379,350,992**	**113**	**268,555,272**	**71**	**10**	**42**	**33**

Source: Seat capacity data are provided by Ryanair (2017), based on Cap-Stat

IV. Top customers B737 MAX

B737 MAX Orders Ranking (+100 orders)

Southwest	280	13,30
Flydubai	251	11,92

Lion Air	201	9,55
GECAS	174	8,27
SpiceJet	142	6,75
Ryanair	135	6,41
United Airlines	135	6,41
Air Lease Corp.	130	6,18
Jet Airways	127	6,03
Gol Trans. Aèreos	120	5,70
Norwegian Air	110	5,23
AerCap	100	4,75
American Airlines	100	4,75
VieJet Air	100	4,75
	2105	46,7%
Total orders (April '18)	4504	100,00%

LCCs	FSCs	Leasing companies
46,0%	34,8%	19,20%

LCCs distribution

Southwest	280	**28,93%**
Lion Air	201	20,76%
SpiceJet	142	14,67%
Ryanair	135	**13,95%**
Norwegian	110	**11,36%**
VieJet Air	100	10,33%
total LCCs	968	**100,00%**

Source: Author's elaboration from "*B737: Orders and Deliveries*", The Boeing Company. April 2018

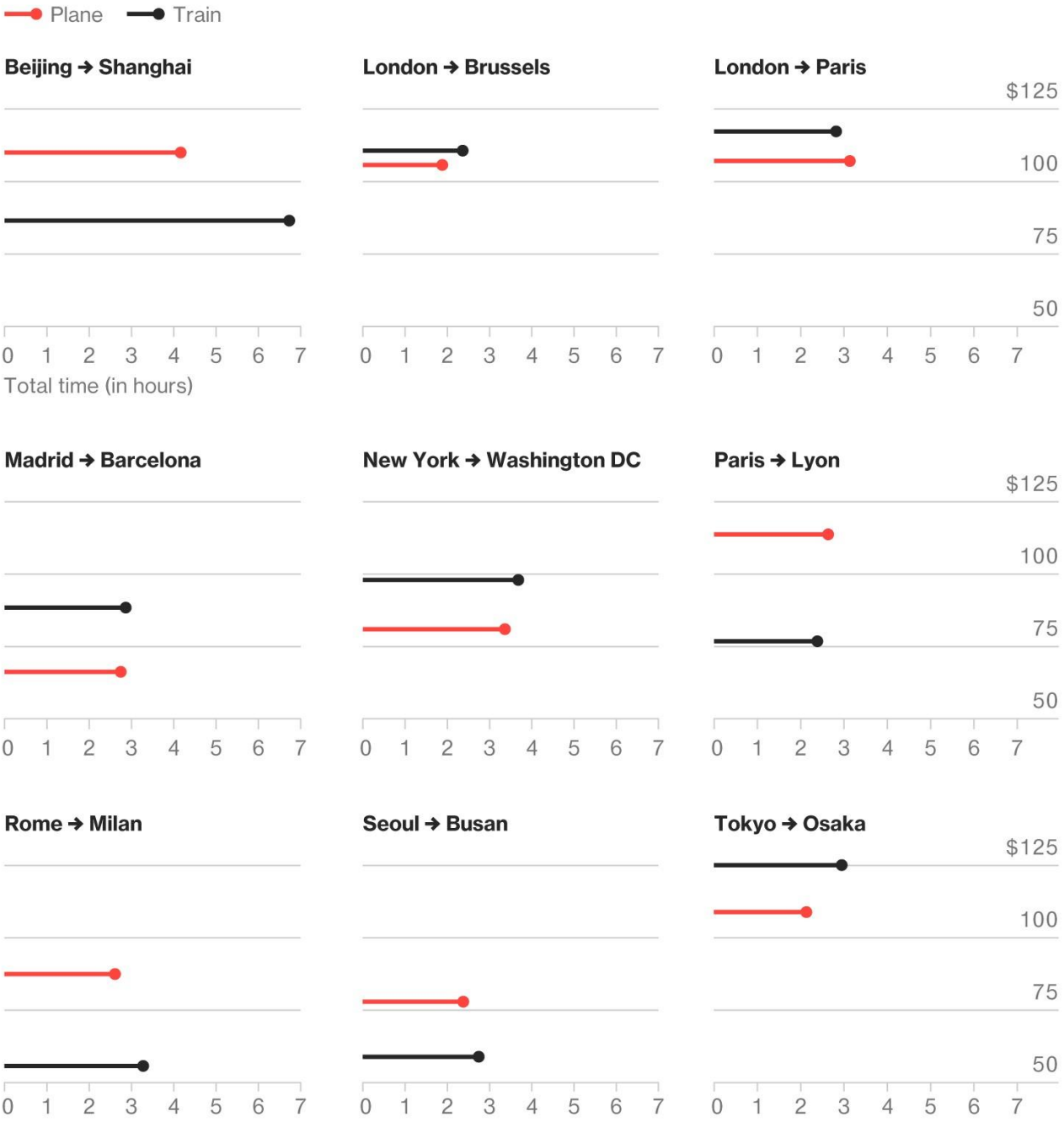
V. Trains faster than flights – European routes

#	From	To	Country	Train duration (hours)	Flight duration (hours)*	Time saved train vs flights (hours)
1	London	Paris	UK-FR	2:16	5:40	-3:24
2	Brussels	Paris	BE-FR	1:21	4:00	-2:39
3	Madrid	Valencia	ES-ES	1:42	3:10	-1:28
4	Paris	Lyon	FR-FR	1:57	3:25	-1:28
6	Bologna	Rome	IT-IT	2:00	3:25	-1:26
5	Marseille	Lyon	FR-FR	1:44	3:10	-1:26
7	London	Manchester	UK-UK	2:11	3:35	-1:24
8	Barcelona	Madrid	ES-ES	2:30	3:45	-1:15
9	Brussels	London	BE-UK	2:05	3:15	-1:10
10	Madrid	Alicante	ES-ES	2:09	3:17	-1:08
11	Amsterdam	Brussels	NL-BE	2:22	3:30	-1:08
12	Milan	Rome	IT-IT	2:49	3:55	-1:06
13	Madrid	Seville	ES-ES	2:21	3:25	-1:04
14	Barcelona	Toulouse	ES-FR	3:14	4:10	-0:56
15	Amsterdam	Düsseldorf	NL-DE	2:19	3:10	-0:51
16	London	Amsterdam	UK-NL	3:41	4:30	-0:49
17	Madrid	Malaga	ES-ES	2:24	3:12	-0:48
18	Berlin	Dortmund	DE-DE	3:18	3:59	-0:41
19	Brussels	Frankfurt	BE-DE	3:00	3:40	-0:40
20	Paris	Geneva	FR-CH	3:13	3:42	-0:29
21	Milan	Zurich	IT-CH	3:23	3:46	-0:23
22	London	Edinburgh	UK-UK	4:14	4:35	-0:21
23	Munich	Frankfurt	DE-DE	3:10	3:30	-0:20
24	Valencia	Barcelona	ES-ES	3:10	3:30	-0:20
25	Paris	Frankfurt	FR-DE	3:38	3:55	-0:17
26	Bologna	Naples	IT-IT	3:00	3:15	-0:15
27	Amsterdam	Paris	NL-FR	3:48	4:00	-0:12
28	Stockholm	Gothenburg	SE-SE	3:07	3:16	-0:09
29	Rome	Venice	IT-IT	3:23	3:31	-0:08
30	Munich	Vienna	DE-AT	4:10	4:15	-0:05
31	Rome	Turin	IT-IT	4:05	4:07	-0:02

Notes: flight duration includes the time to arrive to the airport (and viceversa) and the security check before boarding. All data were collected from GoEuro, using 22nd April 2018 as a benchmark.

Source: *goeuro.com*

VI. Trains faster than flights – international routes



Note: travel time includes average time spent in airports prior to departure and upon arrival

Source: Bloomberg, Report 2017

VII. Air tourism expenditure distribution, air tourism attractiveness

	Tot tourism expenditure (bln)	Population (mln)	N° tourists (mln)	Tourists by plane (mln)	Tourists - other mode of transport (mln)
Germany	40,0	82,5	36,0	20,0	16,0
Greece	17,1	10,7	27,0	15,6	11,4
France	44,3	66,8	82,6	34,0	48,6
Spain	86,8	46,5	81,8	66,6	15,2
Italy	39,6	60,7	60,0	34,5	25,5
Netherland	21,0	17,0	15,8	12,2	3,6
UK	32,5	65,6	36,0	27,8	8,2
	T EXP	*POP*	*TOT T*	*T by P*	*TOT T - T by P*
Average	**40,2**	**50,0**	**48,5**	**30,1**	**18,4**

	How many air travellers per tourist?	How many tourists per habitant?	How many air travellers per habitant?	Tourist exp per capita	Air tourists exp (bln)	Other modes - Tourists exp (bln)
Germany	*0,56*	0,44	0,24	€ 1.111,11	22,2	17,8
Greece	*0,58*	2,52	1,46	€ 633,33	9,9	7,2
France	*0,41*	1,24	0,51	€ 536,32	18,2	26,1
Spain	*0,81*	1,76	1,43	€ 1.061,12	70,7	16,1
Italy	*0,58*	0,99	0,57	€ 660,00	22,8	16,8
Netherland	*0,77*	0,93	0,72	€ 1.329,11	16,2	4,8
UK	*0,77*	0,55	0,42	€ 902,78	25,1	7,4
	T by P/TOT T	*TOT T/POP*	*T by P/POP*	*T EXP PC*	*(T EXP*T by P)/TOT T T)*	*T EXP - ((T EXP*T by P)/TOT*
Average	**0,6**	**1,2**	**0,8**	**890,5**	**26,4**	**13,7**

Notes: All data collected in 2017/2018. Assuming proportional expenditure between air tourists and total tourists

Sources: AENA - Aeropuertos Españoles y Navegación Aérea, UNWTO - World Tourism Organization (2018), Tourism Statistics dataset, National Statistics Dpts, Banca d'Italia, EuroStat

REFERENCES

Akgüç, M., Beblavý, M., & Simonelli, F. (2018). *"Low-Cost Airlines: Bringing the EU closer together"*. CEPS Research Report

Arrigo U., Battaglia A., & Di Foggia, G. (2018), "*Alitalia e il mercato italiano del trasporto aereo nel periodo 2004-2016*", CESISP Working Paper (2), University of Milan – Bicocca.

Arrigo U., Battaglia A., & Di Foggia, G. (2018), "*La nuova crisi di Alitalia e le prospettive di soluzione*", CESISP Working Paper (3), University of Milan - Bicocca

Arrigo U., Giuricin A. (2006), "*Gli effetti della liberalizzazione del trasporto aereo e il ruolo delle compagnie low cost*", XVII SIEP Conference, University of Pavia

Bannò M., Redondi R. (2014), *"Air Connectivity and Foreign Direct Investments: Economic Effects of the Introduction of New Routes*", European Transport Research Review, 6 (4)

Beckestein, A. (2017), "*Public Benefits and Private Success: The Southwest Effect Revisited*", in SSRN Electronic Journal 14 (4)

Bennett R., Craun J. (1993), "*The Airline Degregulation Evolution Continues: The Southwest Effect*". Office of Aviation Analysis, U.S. Department of Transportation

Bergamini, E., Gitto, S., & Mancuso, P. (2010). "*Restructuring the Alitalia business model",* Journal of Air Transport Management, 16(1), 16-19.

Beria, P., Niemeier, H. M., & Fröhlich, K. (2016). *"How Liberalization Can Go Wrong: the Case of Alitalia."* In Wolf et al. "Liberalization in Aviation: Competition, Cooperation and Public Policy", 107.

Arauzo-Carod, J. M., Liviano-Solis, D., & Manjón-Antolín, M. (2010), "*Empirical Studies in Industrial Location: An Assessment of Their Methods and Results",* Journal of Regional Science, 503, 685– 711

Finger, M., Bert, N., & Kupfer, D. (2014), *"High-Speed Rail vs Low-Cost Air: competing or complementary modes?*", Florence School of Regulation, European University Institute

Flottau J., Massy Beresford H. (2017), "*Amid Alitalia Woes, Europe Could Still Use Fewer Airline Players*", Aviation Week & Space Technology, 1-4

Giuricin, A. (2017), "*Il mercato del Trasporto Ferroviario AV*", TRA Consulting, Report commissioned by NTV S.p.A

Giuricin, A. (2016), "*La crisi Alitalia: no all'intervento pubblico*", IBL Focus, Dossier No. 269

Giuricin, A. (2009), *"Alitalia, una privatizzazione infinita",* IBL libri

Lowe, M. (1994), "*Back on track: the global rail revival*", Worldwatch paper No. 118

Moyano A., Dobruszkes F., (2017), "*Mind the services! High-speed rail cities bypassed by high-speed trains*", Case Studies on Transport Policy, 5 (4), 537-548

Oum, T. H., Zhang, A., & Zhang, Y. (1995). *"Airline network rivalry",* Canadian Journal of Economics, 836-857.

Pagliara, F., Delaplace, M., & Vassallo, J. M. (2014). "*High Speed trains and tourists: what is the link? Evidence from the French and the Spanish capitals",* WIT Transactions on the Built Environment, 138, 17-27.

Powell (1995), "*Southwest Airlines v. High-Speed Rail: More Powerful Than a Locomotive*", Journal of Air Law and Commerce, Vol 60

Schumpeter, J. A. (1942), "*Capitalism, Socialism and Democracy*", New York: Harper Perennial Modern Thought

Sellner R., Nagl P. (2010), "*Air accessibility and growth. The economic effects of a capacity expansion at Vienna International Airport*", Journal of Air Transport Management, 16 (6), 325-329

Steffen, J. (2008), "*Optimal boarding method for airline passengers*", Journal of Air Transport Management, 14 (3), pp 146-150

Soyk, C., Ringbeck, J., & Spinler, S. (2017). *"Long-haul low cost airlines: Characteristics of the business model and sustainability of its cost advantages",* Transportation Research Part A: Policy and Practice, 106, 215-234.

Wenseveen J., Leick R., (2009), "*The long-haul low-cost carrier: a unique business model*", Journal of Air Transport Management, 15 (3), 127-133