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Ryanair and Aer Lingus Merger Cases

Theoretical discussion and empirical analysis

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Abstract

This work focuses on the two rejected merger cases No COMP/M.4439 and No COMP/M.6663 which entailed a twofold effort by part of Ryanair to acquire its competitor Aer Lingus, in 2006 and 2012. The aim of the analysis is to provide a discussion of these proposed acquisitions from different standpoints. In the first part, a theoretical commentary highlights the economic reasons which have led the European Commission to refuse the proposed acquisitions. Within this section, theoretical models present in the literature are discussed in application to the mergers analyzed. In addition to this, an empirical analysis is provided within this work. An *event study methodology* is applied making use of stock prices data in the financial market with the aim of offering an alternative classification of the mergers. For the theory underling this second chapter we refer to the *collusion hypothesis*. Results are derived from the comparison of the two sections.

*Alla mia mamma Ilaria,
per il suo inestimabile aiuto.*

*To my mum Ilaria,
for her invaluable help.*

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Introduction

The European merger control, within the broader notion of competition policy, has become nowadays increasingly more attentive to the economics underling the analysis of competition concerns regarding acquisitions among companies. Indeed, the publication of the EAGCP (2005) has encouraged a drastic change in the approach of competition policy from a more rigid form-based to a more flexible effect-base action. A specific analysis of the kind of competition is required on a case-by-case approach and the ultimate scope of consumer surplus protection can be reached in very different ways depending on the competitive structure characterizing the particular case.

The present work is aimed at analyzing the two rejected merger cases No COMP/M.4439 and No COMP/M.6663 which entailed a twofold effort by part of Ryanair to acquire its competitor Aer Lingus, by offering an all-cash bid for the remaining shares in the financial market in both events. Indeed, at 5th October 2006 Ryanair announced a public bid for the remaining shares of Aer Lingus share capital from the already owned 19.16%¹. As for the 2012 case, at 19th June the low-cost company publicly declared the bid for the prominent acquisition of remaining shares which represent 70.18% of total Aer Lingus value. The second trial of acquiring its competitor is justified by Ryanair before the European Commission pointing at the changed competitive situation in the European airline industry from the 2007 condition² which has become even more concentrated into few main players. Ryanair's reasoning stresses how the regional airline carrier of Aer Lingus has failed during the recent period to be attractive for the big groups and, at the same time, it underlines how Aer Lingus is not able to compete profitably Europe-wide on a stand alone basis. In the light of the above, according to Ryanair, the transaction would be the solely way to allow the regional Irish carrier to secure a place in the fast growing European airline market. The merger would thus benefit consumers granting the presence of Aer Lingus in the industry.

The present merger cases show some peculiarities which allow us to define them as different and worth to analyze with respect to past airline mergers. In fact, it has been the case for the first time in European merger regulation that the European Commission has been called to assess an acquisition between two low/no-frills scheduled carriers³ with the respective operational base at the same airport, namely Dublin Airport. All past analyses involved some complementary or operational effect and were, thus, concerned with mergers between a scheduled and a charter airline, as well as a regional and scheduled carrier or a hub-and-spoke model carrier. It derives from the specificity of the analyzed cases that the overlapping routes of concern are larger than any previous analysis and they are all concerned with the same origin airport: the affected number of routes in the

¹ See DG Competition (2007), p.4.

² See DG Competition (2013), p.17.

³ For further details about the business structure of Ryanair and Aer Lingus see APPENDIX I.

2006 case is 35 while it reaches 46 in the 2012 situation. Moreover, all the affected routes in the present study interest customers flying to and from Ireland for intra-European travels.

The scope of the current work is to provide a theoretical comment of the two mergers No COMP/M.4439 and No COMP/M.6663 making use of the economic theory present in the literature with the aim of highlighting the economic reasons which have led the European Commission to refuse the proposed acquisitions. In addition to this, an empirical analysis is provided in order to present the two cases from an alternative standpoint with respect to the one proposed by the European Commission. The empirical part's methodology is inspired by the first section of the Duso et al. (2007) work and it makes use of an *event analysis approach*. Indeed, this latter represents a statistical method to assess the impact of an event on firms value.

“An event study is a statistical technique that estimates the stock price impact of occurrences such as mergers, earnings announcements, and so forth. The basic notion is to disentangle the effects of two types of information on stock prices – information that is specific to the firm under question (e.g., dividend announcement) and information that is likely to affect stock prices marketwide (e.g., change in interest rates)”

(Mitchell, et al., 1994 p. 556-557)

The main idea is to ascertain the *abnormal returns* accountable for the event under analysis by adjusting the stock prices for returns which derive from a market-wide effect. In order to classify merger cases from a Commission-independent point of view, we make use of competitors' stocks reaction in the financial market at the day of the merger announcement. In line with the theory presented in section 2.1.1, positive (negative) abnormal competitors' returns are associated to anti (pro)-competitive acquisitions.

The two kinds of analysis depicted in the previous paragraph deliver interesting results when compared one to the other. The economic discussion of the cases concludes that very high market shares on the majority of overlapping routes were to rise leading to very highly concentrated or even monopoly situations in most markets. Entry projects by competitors are found to be very unlikely and, thus, any competitive constraint is credible to restrict the behavior of the merged entity after the acquisition. Even when considering potential efficiency gains generated from the acquisition which could be able in principle to outweigh the anti-competitive effects of the merger, the evidence brought to the attention of the Commission results to be insufficient and, most importantly, it does not meet the merger specificity requirement. The theoretical investigation results to be in line with the European Commission's decisions. As the empirical findings are concerned, according to our framework, it seems that the 2006 merger proposal would not have shown the adverse provisions addressed by the European Commission in its 2007 decision on the competitive environment entailed. Indeed, our empirical conclusions suggest to define the 2006 merger as a *welfare-neutral* realization. As regards the 2012 situation, instead, our empirical results

do not confirm what is found by the European Commission and in our theoretical discussion: according to our framework, results define the acquisition as *welfare-enhancing* and they depict a situation of unprofitability for the acquiring firm. Some reconciliatory comments are provided in the conclusion of this work.

The analysis is organized as follows: Chapter 1 presents the theoretical discussion of the cases providing details on the economic theory which supports the Commission's decisions; moreover, Chapter 2 focuses on the empirical analysis developing an event study approach; eventually, conclusion for this work is offered at the end.

1 Merger cases

In the present chapter the two notified transactions case No COMP/M.4439 and case No COMP/M.6663 taken under consideration by the European Commission following the request by part of Ryanair will be analyzed. The aim of this section is to outline the economic reasons which have guided the DG Competition Department to refuse twice the notified transactions by part of Ryanair aiming at acquiring its competitor Aer Lingus.

The chapter is organized as follows: in the first part the analysis stresses the elements under which the *community dimension* and the *relevant market* have been identified; secondly, the research deepens the *competitive assessment* of the notified transactions; finally some *efficiency gains* and potential *competitors' entry projects* are debated.

1.1 Community dimension

In order to decide whether the European Commission is competent for the analysis of the cases under consideration, Article 1 of the Merger Regulation has to be satisfied. During the preliminary assessment of 2006 merger notification it was found that the notified concentration had a Community dimension under Article 1(3) of the Merger Regulation. It was in fact the case that the two undertakings had a combined worldwide turnover of more than EUR 2500 million and each of them had a Community-wide turnover of more than EUR 100 million in at least three Member States. Moreover, neither Ryanair nor Aer Lingus used to have more than two-thirds of their Community-wide turnover in one and only Member state. In order to decide the geography of turnover, Ryanair proposed the “50/50 method” which entails to consider a 50%/50% split among the points of departures and the points of arrivals of flights so to consider the cross border activity under consideration. Aer Lingus, instead, insisted that it was not the case of a Community dimension since the turnover is assigned to the point of departure of the costumers, i.e. Ireland, and then split the two one-way flight of a round trip. The Commission found that the above mentioned two thresholds were exceeded by using both methodologies and, therefore, the case was to be considered under a Community dimension pursuant Article 1 of the Merger Regulation. The same reasoning and conclusion have been adopted in the 2013 decision.

1.2 Definition of the relevant market

1.2.1 Introduction

In order to define whether firms are constraining each other and, thus, exercising a competitive pressure we need first to identify which is the relevant market of the analysis. It follows that the more the market is defined within a comprehensive description the easier it will be to find many

competitors within that specific market and, therefore, the less will be the impact on competition of a merger between two or more companies. There are many other dimensions to take into consideration when considering the effects of a merger: it could be that the type of business is slightly different among competitors and thus differentiation plays an important role in the market; moreover, it could be the case that the size of the firms is very unbalanced with some bigger companies holding big shares of the market while others, very small, with almost no market power. These concepts are addressed empirically in the following chapter (see Chapter 2).

In the following paragraphs the definition of the relevant market adopted under the two competition cases will be analyzed: the same reasoning and conclusions have been embraced in both decisions allowing the analysis to be presented only once.

1.2.2 Origin & Destination city pairs

In most of the cases analyzed, the Commission has traditionally defined as relevant market a route or a bundle of routes, as far as there was substitutability among them. This practice derives from the consideration that from a demand-side point of view routes are usually not interchangeable among them. If we consider a consumer who is willing to fly from Dublin to Rome it would be hard to consider that following a small percentage increase in the price from Dublin to Rome he will then choose to fly to another destination. In both cases of 2006 and 2012 the Commission has considered that each point-of-origin/point-of-destination pairs (O&D pairs) constituted a single market from a demand-side point of view. In fact, consumers out of Ireland are considering every kind of transportation solution in order to reach their destination city and are not willing to change it with another one.

1.2.3 Analysis of the relevant routes

Before analyzing each relevant market, the Commission has preliminarily stated an important conclusion between connecting flights. It could be the case, for instance, that a share of passengers flying on the route Dublin – Berlin are not interested in Berlin as a destination city since they are only connecting passengers through Berlin to reach Sidney or San Francisco or San Paulo. This kind of passengers would not be affected by the merger transaction since, in most of the cases, they simply buy tickets for the whole itinerary not even knowing the price for Dublin – Berlin route. The Commission has, therefore, established that connecting flights are not part of the same market and thus the transaction will be assessed on some but not all travelers on particular flights.

In order to assess the competition concerns, the O&D approach adopted by the Commission in its analysis entails that two undertakings are currently constraining each other when competing for those customers who fly from Ireland (Dublin, Shannon or Cork airport) to a given destination. With the aim to assess whether the transaction would affect this competitive constraint or not, the

Commission analyzes on which pairs the competing airlines are actually flying on the same airports of destination and on which others, instead, they are reaching the same destination city but on different airports. This distinction is of crucial interest in defining whether a “city-pair” or an “airport-pair” approach is the most appropriate to define the extent to which Ryanair and Aer Lingus are competing with each other. Consider, for instance, the case of passengers flying from Dublin to Belgium. Taking into consideration the business model of the two competing airlines⁴, we can assume that Ryanair’s passengers would arrive in Brussels-Charleroi airport whilst Aer Lingus’ customers would fly to Brussels Airport. Whether these two airports are to be considered as substitutable from a demand-side point of view is fundamental in determining if the two undertakings are effectively overlapping and thus constraining each other, on the point-to-point route Dublin-Brussels. From its point of view, Ryanair argues that secondary airports are not substitutes for primary airports, as a matter of principle, and in particular this statement holds true for Aer Lingus time-sensitive passengers that would not consider flying to distant airports. With this kind of argument, Ryanair’s aim is to reduce the competitive issue arising from its acquisition proposal: if the “airport-pair” criterion was to be chosen it would have reduced the overlapping routes and thus would have shrunk the competitive issue arising from the merger. In order to disentangle this issue, the Commission has taken into consideration some criteria arising from the market investigation that consumers are likely to consider when it comes to decide on the substitutability of airports: these latter resulted to be *total travel time*, *total travel costs*, *flight times/schedules/frequencies* and the *quality of the service*. These criteria are differently weighted by different consumers and thus it cannot be decided which are the most important *a priori*. However, it can be deduced that if the distance cost to bear will be less than the difference between flight tickets from primary and secondary airports then it could become convenient for some passengers to consider secondary airports as substitutes. The Commission has, therefore, carried on a route-by-route analysis to decide whether in each specific market airports were to be considered substitutes or not.

In 2012 merger case, the Commission found 16 routes on which both Ryanair and Aer Lingus were flying to the same destination airports (“airports-pair”) since no other relevant airport was present and thus no concerns about overlapping route and substitutability were found. On 11 additional routes, the Parties were flying from Ireland (Dublin, Shannon or Cork airport) to the same destination city at the same airports (“airports-pair”) and other airports were present where the Parties were flying differently (“city-pairs”). Whether to consider airports as substitutable from consumers’ point of view was found to be crucial in assessing possible entry projects’ by potential competitors so as to outweigh competitive problems. In those cases, considering different airports as substitutes between each other would have entailed enlarging the possibility of entry constraining the merged entity and thus clearing the case more likely. On the remaining 19 routes, Ryanair and

⁴ For more details on the different business structures see APPENDIX I.

Aer Lingus were flying to different destination airports only (“*city-pairs*”). Considering airports as not substitutes in these cases would have meant that the parties were operating into different markets and thus no overlap concern was to be raised. The same reasoning has been applied in the 2006 case.

Moreover, the Commission takes under consideration two elements of the competing companies to assess substitutability amongst airports: marketing strategies for airports denomination and each other price monitoring activities. The findings outline that both Parties carry out an active monitoring on each other fares on all short-haul routes by means of both price comparison softwares such as “QL2⁵” and direct manual observations of the other website to control and assess discounts and promotions with the aim of adapting its own fares. This is evidence of each other constraining power on the competitive behavior in pricing strategies. Similarly, as far as marketing scheme is concerned, the results from the Commission analysis stress the fact that Ryanair’s marketing label of secondary airports with the principal city of destination names (sometimes the airport is also located in a different city) indicates the airports substitutability that is entailed between the two.

As a conclusion therefore, the Commission takes this reasoning as evidence for assessing airport substitutability between two different airports in the same city (or in the neighborhood) on each separated markets where competition concerns were considered.

1.2.4 Airports substitutability: supply-side substitution

Within the framework of relevant market analysis, the Commission has also considered supply-side considerations. If some airports are considered substitutes for consumers, this does not entail the fact that they are also substitutable for airline carriers which are usually considering substitutability on other parameters than consumers’ ones. From an operational standpoint, airline carriers tend to concentrate their activities in one airport. This happens for different reasons considering the two models of business: *hub & spoke* model carriers try to maximize the network connectivity and thus might not be interested to serve a secondary airport near to their hub. On the contrary, *point-to-point* model carriers attempt to rise cost savings in concentrating their activities in a base and might, then, find it not interesting to serve primary airports when already having current operations at secondary airports.

Another important consideration concerns the type of service quality offered by airlines carriers. Quality, in fact, is a way to differentiate air transport services against competitors. Indeed, network carriers tend to be higher quality (full services) providers than low-cost (no-frills). For the latter’s interests, it would not be optimal to choose primary and more expensive airports that would translate in higher costs to be reflected into final price. On the other hand, for full services

⁵ Price monitoring software capturing fares information from competitors’ websites at regular intervals.

providers, it would not be an option to fly to secondary airports where some valuable dimensions for their target consumers are not present.

The Commission concludes that while demand side substitutability issue is more relevant for the definition of the relevant market, supply side considerations are interesting when it comes to assess the likelihood of entry by potential competitors in those routes affected by competition concerns: indeed, it is necessary to assess whether negative competitive effects brought about by the merger might be offset by credible entry projects by other competitors (see section 1.4).

As it will be explained, the empirical analysis specified in Chapter 2 will be developed considering the relevant market from a supply side approach, namely the European airline industry.

1.2.5 Direct flights and indirect flights

When considering an O&D pair, passengers have in principle two ways of reaching their destination: direct/non-stop flights and indirect/one-stop flights. Whether these two kind of passenger air transport services are substitutable and thus potentially constraining each other is important to identify for the purposes of the merger decision. On the one hand, Ryanair argues that on some routes both kind of services were actually interchangeable and should then be considered as part of the same market. By so arguing, Ryanair tries to enlarge the definition of the relevant market in order to reduce the anticompetitive merger effects including several kinds of transport services within the same analysis. On the opposite side, Aer Lingus complains that there is no space of considering direct and indirect flights in the same market for short-haul routes: as proof of evidence, it reports that it systematically does not monitor the prices of competitors' indirect flights on those routes.

As already considered in past cases, the Commission analyzes indirect flights separately from direct ones for short-haul flights⁶ entailed within the analysis of the two mergers under consideration.

1.2.6 Non-time sensitive and time-sensitive passengers

In past air transport service cases, the Commission has properly defined two different markets for “time-sensitive” and “time-insensitive” passengers. The first ones have been characterized by the fact of being more interested in reaching their destination minimizing the time cost associated with the travel. These passengers are less flexible for the time of departure and/or the time of arrival and are more willing to have the possibility of changing their reservation without advance notice (what is referred to as “unrestricted ticket”). Time-insensitive passengers, instead, are those who are more flexible on the arrival and/or departure time and are, on average, willing to pay a lower price in exchange for a bit longer trip (for instance if it entails the fact of reaching a more distant airport).

⁶Short-haul flights are considered trips taking less than six hours flying.

This important difference reflects the distinct kind of consumer preferences which may be dissimilarly impacted by the transaction. In the extreme case where this effect resulted to be opposite, it would be absolutely necessary to distinguish the two groups in two different markets in order to avoid missing some essential information. This might well be the case of a merger entailing a network carrier and a low-cost carrier whose passengers might really be involved in contrasting ways.

In all past cases where this distinction in passengers' groups has been reflected in different market analysis⁷, one of the merging parties concerned was a network carrier. This is not the case in the notified transactions by Ryanair which entail a merger between two point-to-point low frills carriers. In this specific cases the possibility of price discrimination among heterogeneous groups of passengers is even null and the resulting price schemes are much more simple. Indeed, a first issue arising would be how to identify and discriminate in practice between time-sensitive and time-insensitive passengers among Parties' consumers. Secondly, it is questionable whether would it be important to distinguish these categories when both merging parties have intentionally reduced this difference by offering only one-way tickets without discrimination among passengers.

In the light of what described above, the Commission has decided not to consider as relevant the definition of separated markets reflecting different groups of passengers along the dimensions observed earlier.

1.2.7 Other means of transport

The Commission assesses the case in which other means of transport other than airline transport services could effectively result as constraining the activities of Ryanair and Aer Lingus for the O&D pairs under consideration and should then be considered within the same definition of relevant market: this assessment is technically referred to as *intermodal competition* analysis. Indeed, potential alternative ways to air transport should be considered as far as time, price and quality are comparable. The market investigation carried out by the Commission does not find any evidence in this sense. The two airlines concerned in the notified transactions are both operating from an island and the overlapping affected routes are all out or to Ireland. In past cases, a potential alternative was found to be high-speed train services: in some circumstances, in fact, they have been comparable transportations in time, prices and quality dimensions to air transport services.

In the particular cases under consideration, geographical specificities play an important role in concluding that no other means of transportation is found to exert significant competitive pressures on the routes concerned for the parties of the proposed transaction such as to be considered as substitutable.

⁷ See for instance: e.g. cases M.3940 - Lufthansa/Eurowings, paragraph 12; M.3770 - Lufthansa/Swiss, paragraph 15; M.3280 - Air France/KLM, paragraph 19.

1.2.8 Conclusion on the relevant market definition

Taking into consideration all the aspects presented above, both in 2007 and 2013 decisions the European Commission defined that for the purposes of the transactions under concern the “*relevant markets are the markets for direct scheduled passenger air transport services between a given point (or region) of origin and a given point (or region) of destination*” (DG Competition, 2007 p. 78).

1.3 Competitive assessment

1.3.1 Complementary effect

To attest the absence of complementary effect is of particular importance when assessing the competitive effect of horizontal mergers, such as those studied in the present work. Indeed, as described in the literature by Anderson et al. (2008), assessing complementarity among products might result in an overall positive merger effect on consumers. In their paper the authors consider as an example a route from point A to point C which is served by two separated airlines: one flies from point A to point B and the other one from point B to point C. Analyzing the setting where $P_i(x_i, x_j)$ is positively affected by rivals demand, i.e. the two routes AB and BC are complement, we observe that, when rivals demand on AB route increases, willingness to pay and thus profits for the second route BC increase as well because of the positive externality $\frac{\partial P_i}{\partial x_j}$. As the model predicts, post-merger revenues on both routes internalize this positive externality given by the complementarity of routes. The post-merger maximization of joint profits $\frac{\partial \pi^M}{\partial x_M}$ leads to a merger price $P^M < P$ and, thus, to an increase in consumer surplus. Both merging firms and consumers are better off while rivals are harmed by the merger.

As attested by the European Commission, the present cases do not show complementarity effect given the fact that the relevant market for the level of analysis are single *O&D* routes. Indeed, the study does not take into consideration *connecting flights*.

1.3.2 Market shares on the affected routes

Looking at the market shares is a way to detect the market structure on each relevant route. Indeed, theory suggests that the more concentrated the market the more harmful the consequences of a merger might be for consumers. There are some interesting measures available throughout the literature to assess the level of concentration in a market: from the more basic *concentration index*⁸

⁸ This index is a cumulated measure of n biggest firms in the relevant industry. It is an interesting criterion in oligopolistic markets but it presents quite important shortcoming of not being informative about the distribution of the market size of firms.

of the biggest companies in the industry to the more used *Herfindhal-Hirschman-Index*⁹ (hereinafter “HHI”) and difficult to obtain *Lerner Index*¹⁰.

As regards the 2006 case, the merger would entail the creation of 22 monopolies out of the 35 affected routes. In the remaining routes the merged entity would still control above 60% of the market share (see APPENDIX II for more details about the composition of each route). In the 2012 case, instead, the number of monopolies would even increase to 28 out of the 46 affected by the merger: out of these 46, 26 were also assessed in the 2006 case but, compared to that situation, market shares have increased on those routes due mainly to the exit of other rivals. Overall, if something had changed is the sense of a decreased level of competition. Indeed, in both cases the resulting HHI calculated for remaining non-monopololy routes shows very high values on average: considering for instance one of the more competitive post-merger route as London-Dublin in the 2006 case, the HHI measure would reach a [6000-6500]¹¹ level, namely a very concentrated structure. An estimate of the affected customers on the 35 overlapping routes to and from Dublin following the proposed merger is provided for 2006 year where 14 millions passengers were counted using the air transport service: this value amounts to 70% of the total number of customers flying from and to Dublin on all intra-European flights. It is evident that the proposed mergers would have a considerable impact reducing consumer choices to a very large amount of travellers.

As reported within the Horizontal Merger Guidelines, very high market shares (from 50% onwards) might be interpreted themselves as an indication of the presence of a *dominant position*. Nevertheless, the Commission analyzes every possible circumstances that might outweigh the presumed anti-competitive effect of the present mergers. As detailed in the following paragraph, it is ascertained whether the two companies are really constraining each other on the affected routes and/or potential post-merger entry projects might represent a credible threat to constrain the merged entity in its competitive behavior.

1.3.3 Closeness of competition

The concept of *closeness of competition* reflects the need to ascertain how much Ryanair and Aer Lingus are really constraining each other on the affected routes in order to avoid the risk of assessing the level of competition without considering the differentiated supply by the two carriers. This conception becomes especially important in very heterogeneous markets such as the airline transport service industry: products are highly differentiated with very different services provided under the corispondance of largely different prices, according to the individual preferences of

⁹ The HHI index is calculated as a cumulative measure of the square of firms shares in the market. It is quite easy to calculate and, whenever firms are identical or very similar in size, it provides the number of competing firms in the market by the following relation: $H = 1/N$, with N being the number of firms.

¹⁰ This index is really informative either on the concentration level of the relevant market and on the distribution of the market power among competing firms. Nevertheless, it results to be a very complex and difficult measure to obtain given that it entails a perfect knowledge of current prices and marginal costs of firms.

¹¹ See (DG Competition, 2007), p. 83.

consumers. The existence of some other airline with a more similar business model and cost structure in the entire European airline industry does not entail the fact that Ryanair and Aer Lingus are not each other strongest competitor on the affected routes out of Ireland. Considering the business structure of both airlines, Ryanair argues that they are not comparable and, therefore, this is evidence of the lack of such strong constraining power among the two. However, the Commission reports that other European low/no-frills airlines such as EasyJet, Air Berlin and Flybe are not present in any of the affected routes. The remaining rivals with which the merged entity would compete are all scheduled airlines with very different business models such as British Airways, Air Baltic, Austrian Airlines, Cityjet (Air France), Clickair (Iberia), Lufthansa, Luxair, Norwegian Air Shuttle, Sky Europe and Aer Arann. Moreover, the latter carrier is not considered among Aer Lingus' competitors in the 2012 case due the franchise agreement stipulated in 2010 by the two carriers.

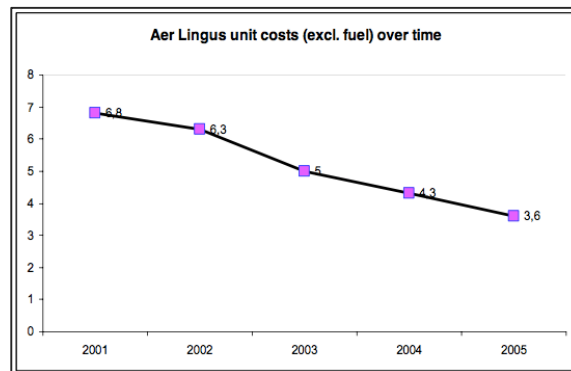


Figure 1¹²: Aer Lingus unit costs evolution since 2001.

Ultimately, the European Commission underlines that the concept that better suits for the definition of closeness of competition stands into the level of substitutability of Ryanair and Aer Lingus products. Indeed, it finds the average prices of the two companies to be very strongly correlated among each other and over time. However, Ryanair claims that the difference in fares is too high to assess substitutability among the two carriers' products. As clearly reported by the Commission, the difference in average prices between Ryanair and Aer Lingus reflects different quality and services¹³. At the net of all supplementary quality and service costs, the difference among the two airlines' prices is not that relevant: it accounted only 30€ in 2006. In any case, as it is showed in Figure 1, Aer Lingus' transition from a traditional carrier model to a low-cost business structure, such as Ryanair's, results evident. Ryanair and Aer Lingus, therefore, come out to be each other closer competitor on the affected routes.

¹² Figure taken from DG Competition (2007), p.93.

¹³ While Aer Lingus flies to primary airports and offers a range of basic services included in the price (such as seat allocation choice, baggage, airport lounges), Ryanair typically uses secondary airports with less services and it does not offer any kind of additional service without a corresponding additional payment (differently from the 2006 case, Ryanair started offering priority boarding and reserved seating at some additional price in the 2012 case).

This kind of analysis recalls some important implications. Indeed, if differences in prices derive from differences in quality, or at least as perceived by consumers, following fare changes by one of the Parties should be reflected by changes in rival demand. For instance, it might be the case that following an increase in Ryanair prices for Bruxelles-Dublin route some travelers consider it now more profitable to fly with Aer Lingus: the price premium of traveling at worse conditions is no more valuable at the new prices, at least for some consumers. The opposite is valid for decreasing Ryanair fares. This confirms the findings that even if Ryanair and Aer Lingus do not offer the same quality level to customers on given routes, the vertical differentiation that characterizes their difference in prices translates itself into a constraint on their competitive behavior.

1.3.4 Actual and potential competition between the Parties

Without the approval of the notified mergers, Ryanair and Aer Lingus compete each other on ex-Ireland routes by deciding in a dynamic way the routes of interest, the frequencies for each route, the number of aircrafts and crew members allocations and, finally, maximising profits by charging optimal prices (in most of the cases on a daily basis, after carefully monitoring rivals' fares). As theory suggests, the implications of this kind of competition might be better addressed by models *à la Cournot*¹⁴. Differently from there, in this circumstance we do not treat homogeneous goods analysis and firms have very different marginal costs, reflecting also the different quality and service levels offered. We might assume that firms in this setting have market power considering that output decisions will likely affect prices. Moreover, it is reasonable to believe that each firm's prices are affected by others' output decisions: firm i 's price is represented by $P_i(q_i, Q_{-i})$ with q_i being the quantity produced by firm i and Q_{-i} describing the total output of the market but the firm considered. Actual competition between Ryanair and Aer Lingus, therefore, boosts the incentives to increase frequencies and, even more, to open new routes out of Ireland: increasing supply will affect negatively the rival price and the latter will then be forced to reduce its output in order to keep the price more or less stable, everything else being constant. Furthermore, the incentives of opening new routes derive also from "*first-mover-advantage*" that allows the first carrier to take advantage of that new market in terms of brand and a temporary monopoly-like behavior. These kind of incentives are greater in more competitive industries, where profits are becoming lower on existing routes as competitors increase, and the search for new "unexplored" routes is more likely and profitable, in relative terms. Indeed, even if Ryanair claims that every airline has incentives to expand and increase its routes portfolio, the Commission has found evidence from past behavior of

¹⁴ The implications of competition within the airline industry are quite complex. We might consider them as a two-stage game in which in the first stage long-run decisions on aircraft utilization, number of frequencies and crew members are taken; in the second period, instead, competition realizes on prices as strategic variables with some constraints (derived by long-run strategies). We might believe then of a *Bertrand model with some restrictions*: this kind of structure gives the same implications of models *à la Cournot*.

the correlation between the degree of competitiveness in the market and the development of new routes by airlines. After the approval of the mergers, therefore, incentives of this sort will likely disappear and, moreover, increases in fares or decreases in frequencies/routes will become more probable. Ultimately, consumers will be worse off.

In addition, the European Commission has investigated potential dynamic implications of the mergers on other kind of routes for future competition. Indeed, there exist some routes in which only one of the Parties was active at the moment of investigation: the aim is to analyze potential future competition on these routes among merging firms, in case the merger is not cleared. This reasoning is slightly different from what is studied and reported in the literature. Indeed, it does not entail an analysis of the present acquisition's effect on potential future merger proposals as reported, for instance, by Nocke and Whinston (2010): indeed, their paper's aim is to identify an optimal antitrust authority behavior when assessing mergers proposals; they argue that a consumer-maximizing antitrust authority (as U.S and U.E agencies) optimally behaves if it chooses a "completely myopic view" with respect to future potential mergers. The authority should analyze and consider cases only looking at the current market composition whenever it tries to maximize intertemporal consumers surplus. Following this argument, therefore, is suboptimal to analyze dynamic implications of the merger approval on future acquisition proposals. Therefore, it seems that implications from this study do not directly concern the Commission's behavior when analysing merger effects on potential future competition on routes where only one of the Parties is in action even if this latter is not implementing a myopic approach on the cases.

The Commission has found strong evidence of past entry behavior of one of the Parties on the other's route, whenever served uniquely by the rival. Indeed, from 2001 to 2006 overlapping routes between Ryanair and Aer Lingus have increased from 6 to 35. In addition, this conduct has resulted to be particularly evident for Ryanair¹⁵. With respect to other companies, Aer Lingus is the only carrier that "survived" on the routes where Ryanair entered successively and was really able to compete with it. The same permanence against Ryanair's competition is not observable for other low/no-cost carriers which tried to enter Ryanair's routes ex-Ireland. For instance, EasyJet and Germanwings, having a base at the destination city, tried to enter the Dublin-Berlin route but were forced to exit following an aggressive price response by Ryanair. A similar response is not credible towards Aer Lingus: it would be too costly to engage in a predatory pricing operation on all the overlapping routes and, moreover, Aer Lingus is able to take advantage of the same *economies of scale and scope* derived by having a base at Dublin airport, as Ryanair.

Overall, the Commission concludes that, given the past evidence of entry by part of Ryanair, this latter is exerting potential constraints on routes where only Aer Lingus is active; on the contrary, the same cannot be said for Aer Lingus. Even if it represents a likely entrant on routes where only Ryanair is currently operative, Aer Lingus' past experience is not so evident and, then,

¹⁵ See DG Competition (2007) pp. 125-126 for a detailed list of routes entered by Ryanair where Aer Lingus was active and for the contrary, namely for routes entered by Aer Lingus where Ryanair was operating.

the Commission has decided in a conservative manner not to consider it as a potential constraint for those routes.

1.4 Potential entry

1.4.1 Introduction

In order to analyze to what extent anti-competitive issues arising from the notified acquisitions might be offset by other considerations, the European Commission investigates potential entry projects on the affected routes. Indeed, the threat exercised by potential entrants might represent a constraint on the competitive behavior of the merged entity. Different kind of entry plans are analyzed: possible entry from airlines establishing themselves with a base at the Dublin Airport; potential entry from carriers with a base at the destination city; finally, competition from rivals starting operations on a route-by-route base without having any base on the route concerned. In order to counterbalance the anti-competitive issues arising from the formation of highly concentrated markets, entry projects should result to be “*likely, timely and sufficient to deter or defeat any potential anti-competitive effects of the merger*” (DG Competition, 2007 p. 137).

The same conclusions are brought from both cases analysis: if anything changed between the two periods it was in the sense of a worsening of the entry barriers situation. The main difference of the 2012 situation has to be found on the economic condition of Ireland which was experiencing a very bad economic downturn in that period with respect to the 2006 condition.

1.4.2 Barriers to entry

There exist various types of entry barriers to take into account when analysing mergers implications in the affected markets. Throughout the two cases, the European Commission establishes which are the most critical barriers arising on the affected routes. It is assessed that regulatory barriers are not representing big issues: all the routes concerned interest intra-European based airlines for which legal requirements to enter new routes have been largely diminished by European law.

The most significant issues when considering entry barriers in the present cases derive from the presence of two very well established airlines in Ireland with a base at Dublin Airport. As reported in the Commission decisions, having a base at an airport allows for *economies of scale and scope*: the availability of assets at the airport provide an increased flexibility of airlines to adjust capacity in response to changes in demand or other needs; moreover, fixed costs as airport facilities, crew expenses or others are easier to spread over more routes and markets permitting to gain increasing returns. For potential rivals entering such a market would require huge marketing costs that may be considered as sunk costs in this setting. When comparing entry on other markets these latter might be considerably less. Ryanair, instead, argues that nearly no entry barriers are present

on the affected routes since airlines are used to adjust their assets to new routes and it connotes every airline business to make such choices. It indicates competitors such as Air France, British Airways and Lufthansa as likely rivals for establishing a base at Dublin airport. Moreover, Ryanair underlines the implications of having a base at destination airports on the routes of concern arguing that the gains are the same of having a base at Dublin airport. Nevertheless, the Commission makes it clear that for carriers at the destination airports the Irish market routes represent only some of the opportunity routes to take into consideration when deciding where to operate flights.

In addition, what emerges from past behavior of the merging firms at the event of entry on routes to and from Ireland seems to confirm Commission's skepticism. Especially concerning Ryanair, an aggressive price retaliation approach has been the strategy. Whenever entrance happened the latter's response was to decrease fares and increase frequencies and capacity. As criticised by Ryanair, a decreasing price response towards competitors' entrance cannot be pointed as an aggressive behavior: Ryanair claims that, since it offers the lowest fares as branding commitment to its customers, a reduction in prices was due by definition. Nevertheless, as it is better argued in the following paragraph, what is matter of concern is that competitors' entry in a market should not boost the incentives to increase capacity by the incumbent firm but in the case where this latter's intentions are to distort competition and convince the rival to exit. This confirms, according to the Commission, a retaliation strategy which is likely to deter entrance in a more powerful way once the merged entity will gain almost all market power on ex-Ireland routes.

From Commission's investigation it came out that most of competitors did not consider the Irish market as a profitable one: Ireland is not a pass-by destination given its geographical distance to continental Europe and, furthermore, is not considered by many as a growing market where is worth to invest. When deciding destinations for additional financing, rivals do not consider the small Irish market. The opportunity-cost of divesting assets in some routes to potentially reallocate aircrafts to ex-Ireland market is too high: given the presence of two very well established companies already operating since a long period of time as Ryanair and Aer Lingus, benefiting of strong brand recognition, makes it uncertain a survival outcome for new entrants on routes in competition with them.

1.4.3 Strategic entry deterrence

The kind of barriers to entry a specific market might be twofold: non-strategic or strategic barriers. Normally, legal and regulatory barriers are not strategically decided by the firm, they are characteristics of the industry. When it comes to assess strategic barriers we refer to as firm's strategies intended to distort competition in the market by deterring or accommodating entry of potential competitors. Considering the situation of the merging airlines within the Irish market, we might believe competition in the long period to occur on quantities, i.e. variables are strategic substitutes. According to the evidence of past Ryanair's behavior when threatened by new entrants

on Irish routes, we can derive that its behavior shows an aggressive response approach to entry. Recalling, for instance, the case of EasyJet in 2005 underlines the way Ryanair responds to new competitors on Irish routes. The second lowest low-cost European company tried unsuccessfully to enter the Irish market on the Cork, Knock and Shannon airports with flights from Gatwick: according to EasyJet, Ryanair responded immediately by increasing its capacity on those minor airports and lowering its fares. EasyJet was forced to leave ex-Ireland routes one year after and never opened routes again from there. Moreover, looking at EasyJet performance through time the Irish market is the only failed attempt to enter a new market for this very efficient airline.

Considering the new merged entity that would emerge after the acquisitions' approval, with near-monopoly market shares on the majority of Irish routes, it is reasonable and likely to predict an *entry deterrence* approach to avoid new competitors to profitably enter ex-Ireland routes. Indeed, an important model on strategic investments in the literature is provided by Fudenberg and Tirole (1984): the authors provide four kinds of firm's strategies to deal with potential entry according to two distinct dimensions of analysis, namely the kind of strategic competition in the industry (*strategic complements* or *substitutes*) and the way the incumbent intends to affect rival's profits once entry has occurred (*tough* or *soft incumbent*). The model is developed into three stages: in the first one the incumbent decides about its strategic investments K to affect competition in the long-run; in the second stage the potential rival firm makes its choice whether entering the market or not; finally, at the third stage, if the rival has entered the market, firms compete with respect to their strategic variables. The game is solved as usual by backward induction. At stage three, provided the competitor has entered the market, both firms compete on their strategic variables σ_1 and σ_2 , namely on quantity for the cases analyzed in this work (aircrafts fleet and frequencies on routes). The payoff functions are $\pi_1(K, \sigma_1, \sigma_2)$ and $\pi_2(K, \sigma_1, \sigma_2)$, respectively. The model assumes the existence of a unique Nash equilibrium for every level of K and thus we have the optimal choices for both firms at this stage as $\sigma_1^*(K)$ and $\sigma_2^*(K)$. At stage two, instead, in order to deter entry the incumbent firm decides a level of K such that potential entrant's gains in the third stage are not profitable, namely $\pi_2(K, \sigma_1^*, \sigma_2^*) = 0$. Decomposing the effect of K on rival's profits, we observe the following impacts as reported in equation 1:

$$\frac{d\pi_2}{dK} = \frac{\partial \pi_2}{\partial K} + \frac{\partial \pi_2}{\partial \sigma_2} \frac{\partial \sigma_2^*}{\partial K} + \frac{\partial \pi_2}{\partial \sigma_1} \frac{\partial \sigma_1^*}{\partial K} \quad (1)$$

where $\frac{\partial \pi_2}{\partial \sigma_2} \frac{\partial \sigma_2^*}{\partial K} = 0$ given that rival firm maximizes profits at stage three. According to equation 1, the incumbent chooses investment K affecting its strategic variable which, in turns, will affect firm two profits (given that variables are strategic substitutes for the airline industry). Applying this theory to the real cases under study, we might think about the strategic investment K to be reflected, for instance, by an excessive investment in capacities and frequencies by part of the merged entity.

This strategy is referred to in the model as a *Top Dog* behavior by the incumbent firm: it is effective for the latter firm to exhibit a strong and aggressive conduct to deter potential entry.

This conclusion seems to be in line with Ryanair's behavior described above and to its well known reputation as "*the largest (and most profitable) European "low-frills" carrier with a clear price-aggressive airline profile*" (DG Competition, 2007 p. 149-150). This implications are very likely to have an even stronger impact on potential competition with a near-monopolist merged entity on all routes to and from Ireland.

Moreover, in 2012 case, Ryanair announced that the merged entity would continue to operate under a "*dual branding strategy*" (DG Competition, 2013 p. 173)¹⁶. This important specification entails some further comments. Indeed, each airline would have continued to operate under its own separated brand and business model in the Irish market with the effect, if any, of increasing the profitability of both firms by allowing a better exploitation of the market power within different segments of demand compared to a single-brand scheme. The implications of dual-branding strategy might be analysed also considering the specific effects that it might have on the entry project plans by potential rivals. Indeed, this business strategy allows to cover a longer ladder of production quality to offer to customers: Ryanair focusing on no-frills travelers while Aer Lingus serving higher-quality demand customers. Within this setting of vertical differentiation, it would be more difficult for competitors to enter those markets: whenever entry is profitable, it is optimal to enter the market offering a new variety of the output to distinguish from others' production. Some conclusions may be derived from *brand proliferation practice* according to which the less the space left on the vertical dimension of a product by a firm, the less will be profitable for new firms to enter that market. What is worth to notice is that this practice results into an effective threat for entrants only if the commitment to leave different quality production in the market remains valid in case of no entry: dual-branding committal is the extreme credible strategy to assure that diversified quality outcome is already provided within the Irish market.

1.4.4 Predatory pricing

Taking into account short-term variables implications on potential competition, thus on entry projects, flight fares decisions are very indicative elements to analyze. As already addressed in the previous paragraph, Ryanair enjoys a very strong reputation as aggressive carrier amongst its competitors¹⁷. Entry and competition against Europe number one no-frills airline has resulted very frequently and for many rivals a failure. Ryanair's reaction to competitors' entry on Irish routes has always been tough: cutting prices and increasing frequencies and capacities on the affected routes. In a competitive setting *à la Cournot*, to which the airline industry might be approximated, when a

¹⁶ In the 2006 case the commitment to *dual branding strategy* and separated business structures is proposed by Ryanair in the phase of additional remedies. For further details see DG Competition (2007) p. 341.

¹⁷ See section 1.4.3 for details on Ryanair aggressive behavior with its competitor EasyJet in 2005.

competitor enters new routes or increases its outcome, the optimal way to react is to diminish production to maintain constant fares, everything else being equal, and still remain profitably into the market. Different responses by part of the incumbent might entail anti-competitive behavior. Amongst others, *limit pricing strategies* are depeened by the European Commission for their anti-competitive implications by inducing entry deterrence. Whenever limiting prices entails a deliberated loss for the firm applying this strategy we refer to as *predatory pricing strategies*¹⁸. Even if temporary beneficial for consumers which are offered flights at lower fares, this plan is intended to induce the exit of competitors. Once the firm become a monopolist or near to, fares increase again and usually they are higher than the competition level before exit occurred.

Policies intended to set lower prices to deter entry might have different outcomes when considering the impact of information in the market. Indeed, theory shows that in a model *à la Cournot* with *perfect information* and one incumbent and one entrant, the commitment to low prices strategy after entry is not credible: the equilibrium is defined as a duopoly whenever entry costs are lower than expected profits. Assuming, instead, *imperfect information* leads to a different result. As derived in the model by Milgrom et al (1982), the entrant does not know the incumbent's cost structure: this latter will be high C_H with a probability μ and, vice versa, low C_L with a probability $(1 - \mu)$. Indeed, the potential rival finds it profitable to enter at the first stage only if the incumbent has high costs C_H which entail high profits. It follows that, even if it is not the case, it is optimal for the incumbent firm to deter entry by producing the corresponding quantity to low costs C_L .

With the aim of applying this theoretical model conclusions to the mergers analysis setting, we consider the information environment within the framework: airlines costs are mostly unknown to each other but for the fact that every carrier is ascertained of the low-cost structure of Ryanair. Such a strong believe, strengthened by past evidence of Ryanair's business strategies, might represent a deterrence for competitors when deciding whether to enter Irish routes: rivals might believe that the cost-structure of the market is too low to make them enter profitably and they rather consider other routes¹⁹. To this regards, Ryanair claims that the European Commission cannot penalize it because of its efficient bussiness model: while this is certainly out of the Commission's aim, this latter's objective is to protect consumers by providing them the most favourable competitive environment in any kind of occurrence.

¹⁸ The definition of *predatory behavior* entails the situation in which the firm is setting a price which results to be lower than its marginal cost of production, namely when $MC > P$.

¹⁹ Moreover, empirical results in Chapter 2 highlight the possibility of predatory response by part of the merged entity which is likely to discourage the entrance of rivals.

1.5 Efficiency gains

1.5.1 Introduction

Having assessed the anti-competitive issues arising on the relevant markets, the European Commission further analyzes whether the mergers' effect might be outweighed by important efficiencies for consumers. Following the theoretical implications of the Williamson's model (1968), it could be the case that mergers implying the creation of very concentrated markets nevertheless might be welfare increasing when entailing synergies and efficiencies. As showed in Figure 2, whenever a duopoly is transformed into a monopoly, as a reaction, price will increase from P_1 to P_2 , with $P_1 > P_2$, since otherwise the effect on consumers would be strictly positive. Nevertheless, in some cases, the efficiencies and synergies brought about by the transaction might be such to compensate the increase in price: the area labeled as A_2 represents the gains deriving by decreased costs. Whenever this area is higher in volume with respect to the losses A_1 created by the merger, the resulting effects are positive, i.e. *welfare enhancing*.

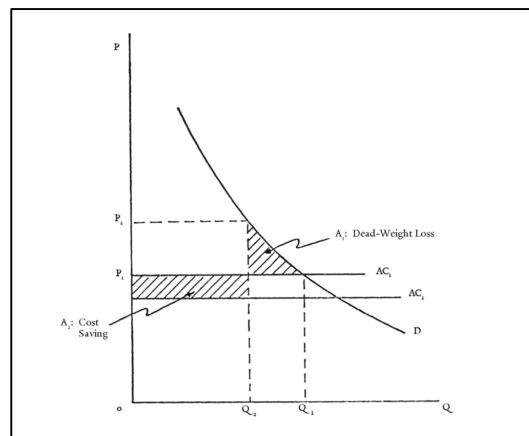


Figure 2²⁰: Williamson's tradeoff.

According to the Horizontal Merger Guidelines, not all efficiencies created by the merger might be considered in order to outweigh competitive issues. Indeed, they should fit some criteria before been considered effective: these latter should be *verifiable*, *merger-specific* and *consumers beneficial*. It is also specified that the incentives to pass on consumers the benefits of efficiencies are higher when the competitive pressures remaining in the market are still a threat: acquisitions that lead to a near monopoly situation on the relevant market identified are very unlikely to be cleared on efficiency claims.

²⁰ Figure taken from Williamson (1968), p. 21.

1.5.2 Ryanair's overview

The acquiring party, Ryanair, underlines that in a situation of low barriers to entry and high level of product differentiation amongst merging parties' production, no competitive issues should be identified. Indeed, as reported by economic theory, the higher the level of differentiation in a market the less likely are issues arising as competition is concerned: product differentiation is a strategy to increase market power in competition with rivals and thus it already provides firms with higher margins. In any case, even according for such problems, Ryanair underlines that efficiencies arising from the takeover are enough to compensate competition concerns. Indeed, it argues that most of the gains will come from operational cost savings and from the application of Ryanair's very well experienced low-cost structure to Aer Lingus. Savings will thus derive from staff, aircraft, airport charges, maintenance costs reduction as well as advertising expenditures decrease.

Moreover, Ryanair submits that the above mentioned efficiencies are *merger-specific* given that Aer Lingus would not be able to reach such an efficient structure without the acquisition. It reports as evidence of this the actual comparison of each others' costs: in addition, it points alternative indications for efficiency such as punctuality of flights, number of luggages lost and flights cancellation rate arguing its outperformance with respect to its rival Aer Lingus.

Finally, Ryanair announces that efficiency gains will be passed on travellers by mean of reduced fares, increased frequencies and quality improvement given the size and scale advantages that the new entity will enjoy in all airports where it will operate. In addition to this, Ryanair argues that the transaction-induced increased efficiency will also benefit Aer Lingus, and thus customers, on its long-haul routes competition with bigger airlines such as American Airlines or US Airways.

1.5.3 Aer Lingus' position

In disaccordance with what reported above, Aer Lingus argues that its rival Ryanair has clearly assessed its evaluation on uncorrect facts without taking into consideration the reduction in costs achieved by Aer Lingus during the last few years and its costs reducing project for the future: as it is well explained in the 2013 decision, Aer Lingus has implemented a 84 million euros cost reduction at the 31st December 2011 as part of its costs saving plan "Greenfield"²¹. Indeed, Aer Lingus argues against the *merger-specificity* of cost savings by contesting its ability to reach them without the acquisition. Moreover, according to Aer Lingus the efficiencies described by Ryanair are very unlikely to be implemented without lowering the quality of its offer: consumers will be offered general decreased travel conditions for flights to and from Ireland. As benefits to consumers are concerned, Aer Lingus is of the opinion that the merged entity would lack the incentives to pass efficiencies onto travellers on the affected routes: assuming a profit maximizing behavior, the new

²¹ See DG Competition (2013), p. 360.

post-acquisition entity will be incentivized to lower prices where it faces competition while to increase margins on routes where there will be no rivals.

1.5.4 European Commission's evaluation

Following the examination of documents provided by both Parties, the European Commission has evaluated whether efficiencies brought about by the notified merger fit the requested criteria of *verifiability, merger-specificity and consumers benefit* as indicated by Horizontal Mergers Guidelines.

From what emerged from the analysis, Ryanair's evidence has resulted insufficient to provide details about the verification of the alleged merger gains. Indeed, most of the claims derive from assumptions made by Ryanair but not really verified: for instance, the ability to fully transfer its low-cost business model to Aer Lingus without affecting the quality provision raises serious doubts. The latter's higher fares reflect, in fact, a different offer to customers which entails primary airports and other services included in the price. A direct comparison of the Parties' costs to assess the alleged lower efficiency of Aer Lingus as advanced by Ryanair does not lead to the proposed conclusion: indeed, it seems on the contrary that the differentiation in terms of quality/price choice undertaken by Aer Lingus is the most efficient one and it allows the airline to compete with Ryanair on all the routes of analysis. In addition, the hostile acquisition situation between the Parties is not likely to allow the alleged efficiencies and synergies to realize very likely.

As the *merger-specificity* is concerned, the Commission has found insufficient indications to define the merger as the only mean to reach the alleged efficiencies. Indeed, the majority of gains pointed by Ryanair refer to cost savings which result to be reachable by the separated Parties on their own. As already pointed above, the vertical differentiation model followed by Aer Lingus cannot be taken as evidence for lower efficiency when compared to Ryanair's business practice.

As a conclusion, it is worth to underline how the proposed efficiencies involve only fixed-costs reductions. These latter are more likely to be passed onto consumers when deciding about long-run choices, for instance, of opening new routes or increasing frequencies than to directly benefit existing routes travelers. As economic theory sustains, the incentives to lower prices increase when production expenses reduction affects marginal costs instead of fixed ones.

Overall, the European Commission establishes that Ryanair's claims about merger's efficiencies are not verifiable and they do not result to be merger-specific as required: the merger's anti-competitive concerns arising from the competitive analysis are not likely to be compensated by efficiency gains.

2 Empirical analysis

In this chapter an empirical research of the effects on competition of merger cases No COMP/M.4439 and No COMP/M.6663 is developed. The outcome of the mergers announcement is investigated on the competitive environment of the European airline market. In order to assess the above mentioned effects, an event study approach is followed considering the European airlines stock values reactions. The aim of this section is to provide an alternative standpoint for the evaluation of the mergers, before the analysis of the European Commission has been accomplished.

The chapter is organized as follows: in the first part, the empirical study on the mentioned mergers announcements is developed and findings are presented; secondly, it follows a literature review on the methodology used and main empirical results achieved.

2.1 Data analysis

In order to assess empirically the consequences of the mergers under analysis on the competitive environment in the European air transport service market²², we need firstly to specify the dimension according to which mergers are defined to be *pro-* or *anti-competitive* (i.e. whether they increase or decrease consumer surplus). We proceed in this section following the idea used in the paper by Duso et al. (2007)²³ on the political economy of European merger control. Differently from our aim, in their paper the scope is to ultimately investigate the European Commission determinants for merger decisions: to be able to do this the authors define a measure for the judgement of pro- or anti-competitive mergers by using the stock reactions in the financial market. We make use of this method in section 2.1.3.

2.1.1 Implications of the analysis

The approach followed in this chapter is based on two important elements: the stock reactions to event announcements in the financial market and an assumption on the functioning of competitive environments which is satisfied in many cases, even if not in all of them. More specifically, we classify a merger as anti-competitive whenever competitors' stock price reaction in the financial market at the date of the merger announcement is positive. On the other hand, an acquisition is presumed to be pro-competitive if competitors loose from it.

²² Within this section, we refer to *market* as the European airline industry following a supply side approach of the definition. The analysis of competitors' profitability cannot be analyzed considering only routes ex-Ireland, as it has been assessed in Chapter 1, since some airlines are Ryanair's or Aer Lingus' rivals on other routes Europe-wide.

²³ For a more detailed explanation of Duso et al. (2007) see section 2.2.

To better understand this key assumption consider an homogeneous Cournot model: especially in long run competition, the airline industry might be well approximated by model *à la Cournot* without loosing important considerations on short run dynamics²⁴. The efficiency implications of the merger in terms of consumer surplus and total surplus are represented in Figure 3. Consider, for instance, the situation in which the announced merger entails some cost savings for merging firms

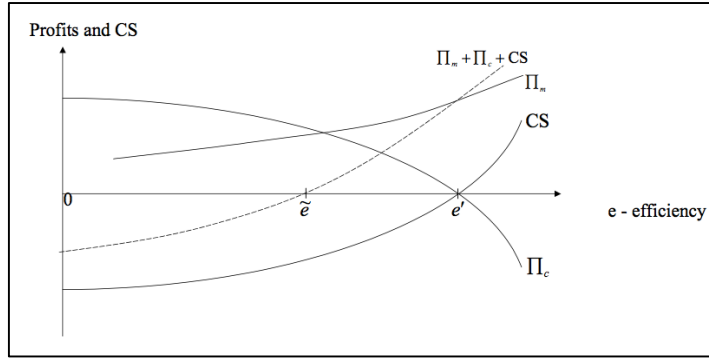


Figure 3²⁵: Efficiency, Profits and Welfare.

with respect to the pre-merger level of marginal costs (which is assumed to be the same for all firms in models *à la Cournot*). This effect on costs is reported in Figure 3 on the horizontal axis: the higher the cost savings, the higher the efficiency brought by the merger. We can easily notice from the graph that competitors' profits Π_c is a decreasing function of the level of efficiency brought about by the merger. Specifically, this value is equal to zero when the level of efficiency coincides with e' : this amount corresponds with the minimum level of efficiency needed to make consumer surplus CS non negative. Moreover, it is not surprising that the total surplus $\Pi_m + \Pi_c + CS$ requires an inferior level of efficiency $\tilde{e}$ from the merger to result non negative: in fact, it entails the gains of competitors' and merging firms' profits $\Pi_m + \Pi_c$. The gains of the merging firms Π_m are always positive for every level of efficiency gains, otherwise there would be no aim in proposing the merger. We can thus conclude from the negative relationship between consumer surplus and competitors' profits the key assumption of the model: profitable mergers for competitors might be presumed to be anti-competitive.

Some other interesting remarks might be deduced from the graph: as it is easily noticeable each merger needs to bring about at least some level of efficiency to be profitable both from a total and a consumer surplus standpoints. The efficiency level e' is reached as soon as part of the reduction in costs is passed onto consumers: in this sense, the negative effect of a reduction of competitors is outset by the decrease in prices. These kind of arguments are not valid for all classes of mergers and, in particular, they become less robust when considering different mergers from

²⁴ The airline industry competition is a complex mixture of long run and short run decision strategies: as far as routes or capacity determination are concerned, we can think that those are long run strategies. These latter implications seem to be better described by a model *à la Cournot*. As soon as short run competition is at stake, instead, prices result to be the strategic variable under decision. Still, capacity constraints are present also in the short run: this leads us to define short run competition as better approximated by a *Bertrand model with capacity constraints* in which prices do not fall to marginal cost level. This kind of competition leads to the same conclusions entailed in Cournot models.

²⁵ Figure taken from Duso et al. (2007), p. 7.

horizontal acquisitions. When considering, for instance, a merger between two vertically related companies the implications might result more complex and different: it could be the case that the merger leads to foreclosure of competitors and it brings decreasing profits for them as well as bad consequences on consumers.

2.1.2 Implications of stock market data

The consideration of stock market data reaction has been largely used and first implemented by Eckbo (1983) and Stillman (1983)²⁶. The idea beneath the usage of financial market stock reactions derives from the need to assess a profitability measure for those mergers which have not been cleared and for which potential profits did not realize. Looking at the positive additional profits (*abnormal return*) made by competitors at the date of the merger announcement provides an index for the gains that rivals are expecting as a consequence of the acquisition. A positive effect might reflect the increase in market power due to the diminished number of competitors: this result has been called “*collusion hypothesis*”²⁷.

There exist some important drawbacks that is worth to outline when performing an empirical test using equity data. Firstly, issues have been highlighted by Eckbo and Wier (1985) on the validity of the collusion hypothesis. They argue that the increase in the value of competitors’ equities might be the result of increased future market-wide efficiencies derived from the merger rather than enhanced market power, as the collusion hypothesis predicts. This setting implies that positive competitors’ profits are positively linked to consumer surplus. However, no micro-foundation theory is provided: the authors derive some conclusions from an empirical test on a sample of 259 US mergers. Their results point to a more significant importance of potential future gains effect on competitors’ stock changes. In any case, these empirical consequences rely on a very strong assumption of perfect efficiency of antitrust actions.

Merger waves :		
• The economic history has been divided into <i>Merger Waves</i> based on the merger activities in the business world as:		
Period	Name	Facet
1889 -1904	1 st Wave	Horizontal Mergers
1916 -1929	2 nd Wave	Vertical Mergers
1965 - 1989	3 rd Wave	Diversified Conglomerate Mergers
1992 - 1998	4 th Wave	Congeneric Mergers, Hostile Takeovers, Corporate Raiding
2000 onwards	5 th Wave	Cross Border Mergers

Figure 4²⁸: Merger Waves from 1889 to nowadays.

²⁶ For further details see section 2.2.

²⁷ This theory has been formally derived under the setting of the most common models of oligopolistic competition. As derived in the model by Fudenberg and Tirole (1994), an acquisition with efficiency gains for merging firms is likely to decrease prices and competitors’ profits while, thus, benefiting consumers.

²⁸ Reference: <https://www.slideshare.net/ulhasw/mergers-acquisitions-for-mba> on 16th June 2017.

Moreover, McAfee and Williams (1988) stress the implication of big conglomerates that make profits only for a small share on the relevant market: this would reduce their interests in the merger consequences and thus could lead to a downward biased effect or, in the worse scenario, to a failure to detect increased market power from financial market reactions. This shortcoming is of particular interest for this research since we will see that some of the competitors' data used in the analysis are taken from agglomerates or investors hedge funds²⁹. Some other authors underline the potential effect that a merger announcement might have on the likelihood of other acquisitions: it could be the case in fact that positive competitors' reaction is linked to the raise in incentives for other merger decisions. As underlined in the literature and reported in Figure 4, mergers are very likely to happen in waves. Merger decisions between two or more companies in a determined market appear to be *strategic complement* variables between each other. If thinking about an industry with four competitors in which, after mergers took place, competition happens amongst two merged entities, the payoff matrix shows two Nash equilibria: both acquisitions happen or none. This seems to have been the case in the American airline industry in 2008 when Delta Airlines and Northwest Airlines announced their merging intentions boosting the incentives for Continental Airlines and United Airlines to form a unified entity in the aftermath of their competitors' merger publication. Whether this "in play" effect is found to be empirically important is a matter of debate. A study by Salinger and Schumann (1988) tries to highlight these effects but its conclusion leads to ambiguous results. Moreover, Simpson (2001) in his analysis on US department store mergers finds positive abnormal returns of merging firms as well as of their rivals and he concludes that the effect derives mostly from the increase in market power as predicted by the collusion hypothesis rather than the raised probability of future mergers in the same industry.

Another shortcoming from the use of financial equity reactions might be due to issues about information quality. Financial markets are very sensitive to any kind of information divulgation that might bias the results of abnormal returns on the day of the announcement or in the days around that event. It could be the case, indeed, of sensible information divulgation among some major shareholders before the bid is publicly announced: this effect would bias the results of abnormal returns analysis on the event day. For this reason, our analysis will be considered also for aggregated values from 3 to 11 days around the announcement date. Furthermore, it might happen that more than one event is affecting the investors' sentiment at the moment of the public bid declaration: this would affect drastically the conclusions derived by financial market data if not accurately disentangled from different events effect.

Nevertheless some shortcomings are evident, the use of equity returns to assess merger cases entails important advantages. Firstly, stock market assessment is independent from the European Commission behavior: it can be seen as an *exogenous* decision. In fact, it is an evaluation that is taken before the DG Competition Department decides on the case and, even more important,

²⁹ This issue is considered to be irrelevant for the interpretation of our results given the very small weight that the agglomerate company Stobart, accounting for Aer Arann airline, has in our data for the European airline industry.

we are able to observe acquisition's expected effect despite the fact that the merger might not be cleared afterwards. Indeed, this has been the case for the two mergers under analysis and, thus, the method provided by event study approach using financial market data is of particular interest. Moreover, financial market data are very easy to observe and to obtain, an advantage that given time constraints is specifically important. Their usage avoids the complex construction and collection of data for consumer surplus and competitors' profits proxies that would entail the estimation of parameters for the underlined demand. Ultimately, analysing profits in the financial market accounts for real interests of investors that might have a clearer view when assessing their profits than some estimated dynamic equation for profitability of the market in the long run. According to the *efficient market hypothesis*, in fact, all publicly listed information is fully reflected into security prices: in its "strong form" all information is fully reflected leading to an omniscient market.

In the next section we provide an estimation of the mergers effects by making use of a methodology inspired by Duso et al. (2007) for the descriptive classification of acquisitions.

2.1.3 Calculating abnormal returns

The aim of the present analysis is to analyze from an empirical point of view the two merger cases No COMP/M.4439 and No COMP/M.6663. These have not been cleared by the European Commission in 2007 and 2013 due to important concerns altering the competitive environment in the European airline market, with particular implications in its Irish-specific delineation. The analysis inspires from the classification method used in Duso et al. (2007) according to which a merger is presumed to be *anti (pro)-competitive* whenever competitors' profits in the financial market at the day of the announcement are *positive (negative)*. Further below, the details of the analysis are provided.

Data

The study makes use of stock market and market capitalization data provided by Macrobond software on European airline market companies and it is divided into two subsamples of firms for the different timing of the two cases, i.e. 2006/2007 and 2012/2013. In both groups, data have been considered for a period of one solar year which corresponds to almost 240 trading days. In the first case (hereinafter "I Merger") the time framework provided goes from 1st May 2006 to 31st May 2007 while in the other case (hereinafter "II Merger") it goes from 1st August 2012 to 31st August 2013. As we can see in Figure 5 and Figure 6, the airline market represents quite a large variation of stock prices across companies but such variance is not observed per firm across time. The Meridiana case in I merger sample represents an exception since it experienced quite a huge increase in its stock value in the last quarter of 2006. The overall pattern of the market is quite

stable during the two solar years: in any case in the 2012 subsample an overall price increase trend of the European airline market is evident throughout the period considered. This might be justified, amongst other reasons, by the slow but real economic recovery of the Eurozone.

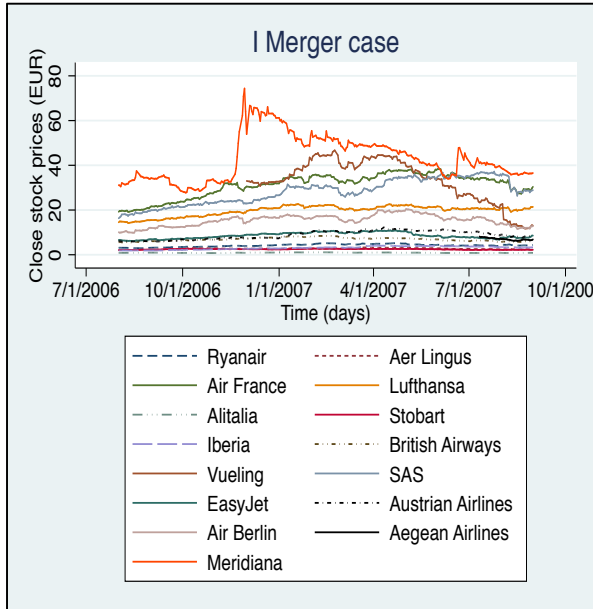


Figure 5: Stock market data from 1st August 2006 to 31st August 2007.

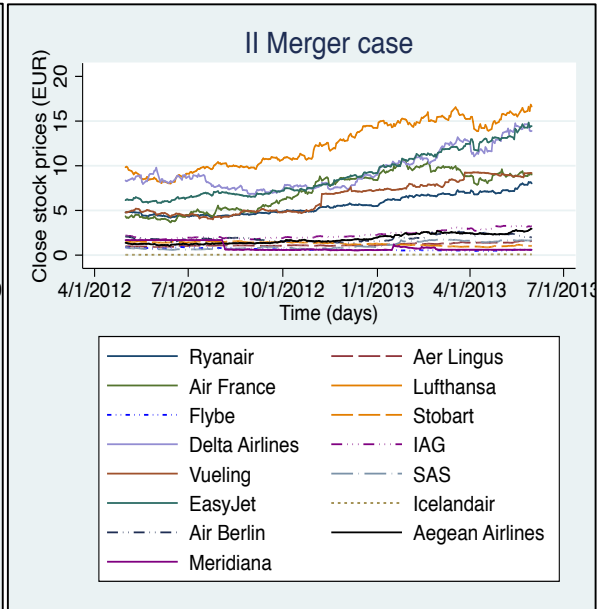


Figure 6: Stock market data from 1st May 2012 to 31st May 2013.

Unfortunately, due to data availability, the two samples are not representing the entire European airline industry: some airlines are not traded in the financial market since they are state-owned flag carriers. This is the case of Tap Portugal, Luxair and Air Baltic for instance. Furthermore, some other European company entered the financial market only very recently so data are not available for the periods under consideration. This is the case of Norwegian Air Shuttle and Wizzair whose information is accessible only from 2015 onwards. In addition, some airlines have been acquired by their competitors even if they are still operating under separated brands: for these airlines the stock data are incorporated into those of their main shareholder company. In this group some important airlines are present such as Brussels Airlines, BMI and Eurowings which are part of the Lufthansa Group; Cityjet as well is entailed in Air France fluctuations. Still, Aer Arann airline is part of the Stobart Group which entails some other transportation companies even if they are not part of the airline industry and Delta Air Lines represents 49% of the British Virgin Atlantic shares. This might represents a shortcoming on the results since, as already discussed in the previous section³⁰, agglomerates of investors might diversify their interests in several markets and, then, be less affected by the airline industry more specifically³¹.

³⁰ For further details see section 2.1.2.

³¹ Anyway, this problem is addressed into more details successively during this section.

Eventually, there are some differences between the two samples for the different periods of analysis: in the I merger group Flybe, Icelandair and Delta Air Lines are not present since their data are only available in the next period; in the II merger case, instead, Austrian Airlines, Alitalia and Iberia are not included. Indeed, Iberia merged with British Airways in 2011 to form the International Airlines Group (IAG) to which Austrian Airlines joined afterwards while Alitalia exited the financial market in 2008.

In Appendix III, each firm daily abnormal returns are provided for both cases: the behavior of returns is individually different but we can overall assess a fluctuating trend over the zero, more or less pronounced according to the firm considered. This consideration is of particular interest for

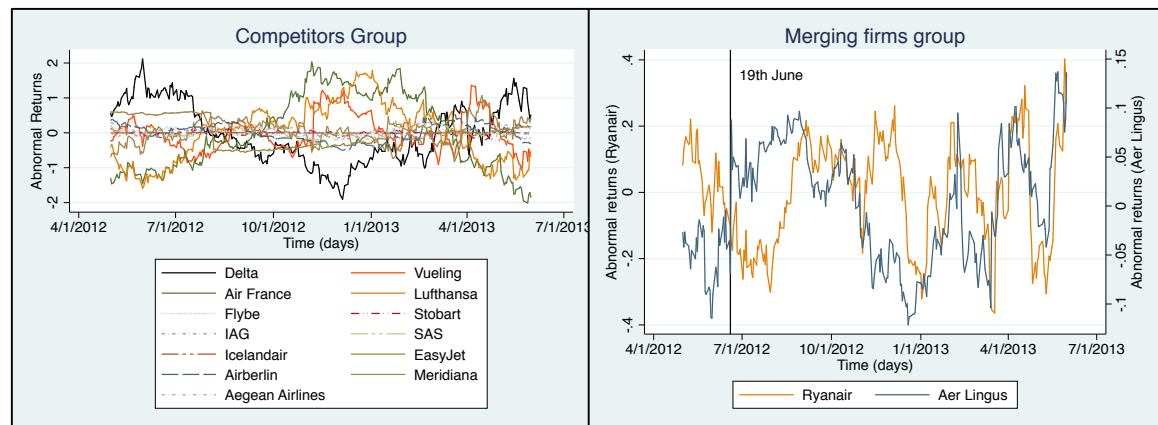


Figure 7: Analysis of the two groups in the 2012 merger case.

the assumption of expected zero mean of residuals that will be deepened in the next section³². Another peculiarity of abnormal returns which stands out from the graphs is *volatility clustering* for the majority of the firms analyzed: periods of low instability, where abnormal returns are quite low, are followed by periods of high instability, and vice versa.

Following an in-depth analysis of competitors' group in the 2012 case as reported in Figure 7, we can notice a clear pattern over time for almost all companies but Delta Air Lines (black line): this latter is behaving in the opposite way with respect to the entire market firms for almost all the period of analysis. Established this outlier and considering its important weight in the profitability measure for the rivals group which is depicted later, we decided to compute the analysis without considering it to avoid the possibility of biased results. Our choice is also instructed by the fact that Delta Air Lines is an American airline which might be well exposed to different informations and interests than European airlines.

As regards merging firms group panel in Figure 7, it is worth underlining the particular pattern that characterizes Ryanair's and Aer Lingus' stock behavior around the announcement date of 19th June 2012: as we can clearly see from the graph, both firms' stock trends are inverting each

³² The assessment of zero average mean of abnormal returns is fundamental for the analysis since residuals of OLS estimation are on average zero: this assumption is confirmed by the data (see APPENDIX III).

other in the nearby days. Ryanair's equities show a negative performance while Aer Lingus' trend is clearly increasing. Anticipating the comments on the profitability measure for 2012 case, we can emphasize how the resulting negative values of the group³³ are mainly driven by Ryanair's trend in the period around the merger announcement day. Even if it may seem a puzzling result, very low or negative profits for the acquiring firm are quite usual in the event study literature. As reported by Duso et al. (2007 p. 22-23), low or negative gains for bidder firm result from an allocation failure of benefits among merging firms.

Methodology

Our purpose is to identify merger cases No COMP/M.4439 and No COMP/M.6663 as *pro-* or *anti-competitive* following the event study approach used by Duso et al. (2007) in the first part of their research. In order to do so, we need to estimate a proxy for competitors' profits at the announcement date of the mergers. In line with this intention, abnormal returns of competitors' stocks are identified making use of the *Market model*. This latter allows to disentangle two effects that might play an important role in determining a firm's stock volatility: a firm-specific and a market-wide effect. Its formulation is described in equation (2):

$$R_{j,t} = \alpha + \beta \times RM_t + \varepsilon_{j,t} \quad (2)$$

where $R_{j,t}$ and RM_t are firm stock and market stock returns on day t , respectively, while $\varepsilon_{j,t}$ represents the firm-specific effect on stock j at that particular day. The Market model entails some important assumptions on its variables: $\varepsilon_{j,t}$ is uncorrelated with the market index and has an expected value of zero³⁴. It follows that the expected event day firm returns conditional on the event day market returns coincide with equation (3):

$$E(R_{j,t} \mid RM_t) = \hat{\alpha} + \hat{\beta} \times RM_t \quad (3)$$

Once considered these implications, abnormal event day returns for stock j $AR_{j,t}$ are represented by event day returns $R_{j,t}$ adjusted for the expected conditional returns on event day market returns as reported in equation (4).

$$AR_{j,t} = R_{j,t} - E(R_{j,t} \mid RM_t) = R_{j,t} - \hat{\alpha} - \hat{\beta} \times RM_t \quad (4)$$

³³ See Table 2 p. 37.

³⁴ While the correlation between market index and residuals is commented at the end of this section, the residuals expected average of zero has been already addressed and confirmed by the data (see APPENDIX III).

Indeed, the analysis stands on the idea that abnormal returns are that specific part of stock j 's volatility which cannot be explained by the Market model and is, in fact, firm-specific. It is interesting to outline that, following the reasoning above, $AR_{j,t}$ corresponds to $\varepsilon_{j,t}$ in equation (2).

In order to estimate the Market model, we need firstly to estimate a *market index*. For this purpose, stock prices data for each airline have been indexed for the first day of the sample to be able to compare them and analyze the evolution throughout the period. The index for the market returns RM_t is recalled in equation (5)³⁵:

$$RM_t = \frac{\sum_{j=1}^N p_{j,t} \times m_{j,t}}{\sum_{j=1}^N m_{j,t}} \quad (5)$$

where $p_{j,t}$ is the stock price index of airline j at time t and $m_{j,t}$ is the relative market value of airline j in time t . The regression for the *Market model* in equation (2) has been computed for each firm j to have abnormal returns for all companies. Proceeding with the analysis, in order to calculate the merger announcement effect on competitors' (and merging firms') profits we estimate a weighted average measure for abnormal returns $WAAR_{i,t}$, the weight being firms j 's market value, as defined in equation (6):

$$WAAR_{i,t} = \frac{\sum_{j=1}^N AR_{j,t} \times m_{j,t}}{\sum_{j=1}^N m_{j,t}} \quad (6)$$

where $i=m,c$ are the two classifications of firms between merging firms and competitors and t is daily timespan. Considering this weighted measure at the event day of the two merger announcements (5th October 2006 and 19th June 2012) provides an overall estimation of competitors and merging firms investors' profits through the reaction in the financial market to the proclaimed mergers. Recalling that abnormal returns $AR_{j,t}$ are identified as follow:

$$AR_{j,t} = R_{j,t} - \hat{R}_{j,t}$$

where $R_{j,t}$ is firm j 's return at the day of the announcement event t and $\hat{R}_{j,t}$ is the stock value estimated by the Market model on that day. We are, thus, able to identify which would have been the returns on day t if the merger had not been announced. This concept is graphically represented in Figure 8: the values in the graphs represent aggregate weighted values for real returns (blue lines) and for predicted returns by the model (yellow line) for the two groups of analysis, i.e. merging firms and all competitors, for both merger cases. The difference between the two lines depicts exactly the amount of abnormal returns on each day at the group level ($WAAR_{i,t}$) which might be

³⁵ The market index is computed taking as a benchmark the S&P 500 Index computation for the American equity market. For this reason, a weighted average market capitalization method is used as reported by equation 5.

explained by other reasons than the market effect. Further robustness measures for periods around the event day are provided in order to take into consideration potential postponed or anticipated effects. We consider cumulative aggregate values (CAR_t) for 3, 5 and 11 days around the announcement date.

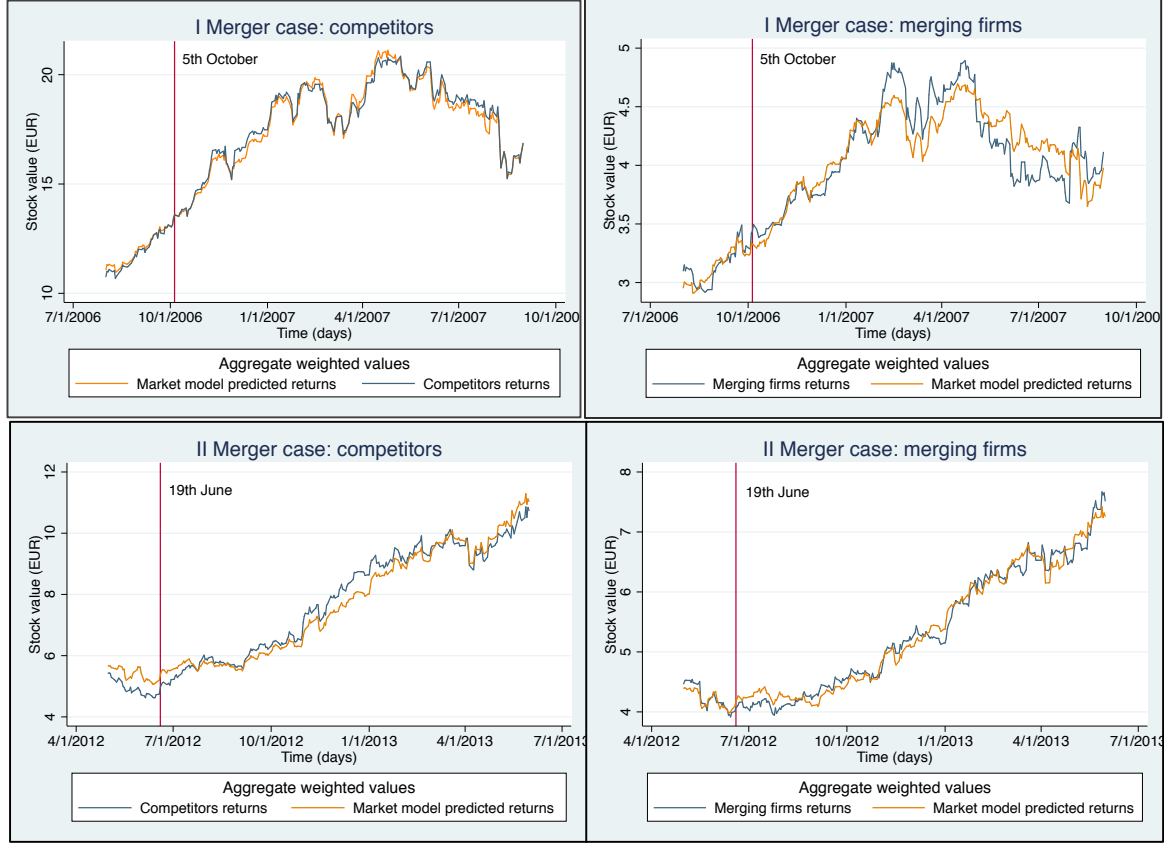


Figure 8: Market model analysis for merging firms and competitors' group in 2006 and 2012 merger cases.

As far as significance of results is concerned, this one is inferred considering the assumption of normality for the distribution of abnormal returns AR_t after a careful examination of the data (see APPENDIX IV) and as frequently done in the literature³⁶. Under the null hypothesis of “no abnormal exhibition of returns on the event day”: $H_0: AR_0=0$, AR_0 has a zero mean and a variance $Var(AR_0)$ distributed according to the least squares prediction as specified in equation (7):

$$Var(AR_0) = \sigma_\varepsilon^2 + \frac{1}{n} \left[\frac{(RM_0 - \overline{RM})^2}{\hat{\sigma}_m^2} \right] \quad (7)$$

where $\hat{\sigma}_\varepsilon^2$ is the disturbance variance of equation 2 and the second term represents an additional variance due to sampling error in the estimation of the $\hat{\alpha}$ and $\hat{\beta}$ parameters in the Market model. In any case, as the sampling estimation period n becomes large, the second component tends to be nul

³⁶ The assumption of Normal distribution derives from the Central Limit Theorem according to which given a random sample with n observations independently and identically distributed (i.i.d.), the size and distributional form of that variable around the expected population average μ can be approximated by a normal distribution (bell shape) with mean equal 0 and variance equal σ^2 as $n \rightarrow \infty$.

given that sampling error disappears. Assuming the normality distribution of abnormal returns, the *T-statistic* in equation (8) is distributed under a *Student-t* distribution with $(n - 2)$ degrees of freedom³⁷.

$$T_{n-2} \cong \frac{AR_0}{\sqrt{var(AR_0)}} \quad (8)$$

Considering a critical value ψ for a confidence test $(1 - \alpha)$ ³⁸, we have that the null hypothesis H_0 is rejected when $\psi < T_{n-2}$. Rejecting the null hypothesis H_0 provides evidence of the fact that the event had a *positive* significant effect on the stock price. The same reasoning applies when the critical value is found to be $-\psi > -(T_{n-2})$ and we can conclude that the event had a *negative* significant effect on stock returns.

Before moving to the outcome of the analysis, it is worth underling an econometric issue related to the Market model delineation. Indeed, the OLS assumption of uncorrelated residuals with the market index is not confirmed: the index for the market behavior contains each firm returns. Despite this inconvenience, this issue is not of serious relevance for the interpretation of results given that the market index considers all firms in the industry, thus, none of them plays a major significant role.

Results

Following the analysis described in the preceding section, it is worth to underline some major results both in terms of market structure and as regards the merger announcement impact on returns provided by the $WAAR_{i,t}$ measure.

As an introductory qualitative analysis from Figure 9, we can note that the composition of the market is slightly different in the two samples even though the number of competing firms has remained almost the same in both cases. In the 2006 merger case the market composition is more polarized with four biggest companies (Ryanair, British Airways, Lufthansa and Air France) representing each one between 15-20% of the entire industry and the rest of competitors standing between 0-10% each. In the 2012 situation, instead, the industry is clearly less polarized with the distribution of firm sizes better spread throughout the entire dimension but there are now four biggest companies between 10-30% of the market (Ryanair, Lufthansa, IAG and EasyJet) and one medium-size firm standing under 10% of the distribution (Air France): all the rest of competitors became almost insignificant in terms of market value. The concentration trend of the market is corroborated by the HHI values reported in Table 1.

³⁷ In the case of the present empirical analysis n corresponds to more than 200 and, thus, the distribution for the *T-Statistic* might be well represented by the Normal.

³⁸ The confidence interval indicates the lowest and highest values of a variable between which the 99%, 95% and 90% of observations are included considering a significance level of 1%, 5% and 10%, respectively.

Indeed, in the I merger the market results a bit *concentrated* with an HHI value of 1364 while in the II case it has become *moderately concentrated*³⁹ with an increased value of 1905.

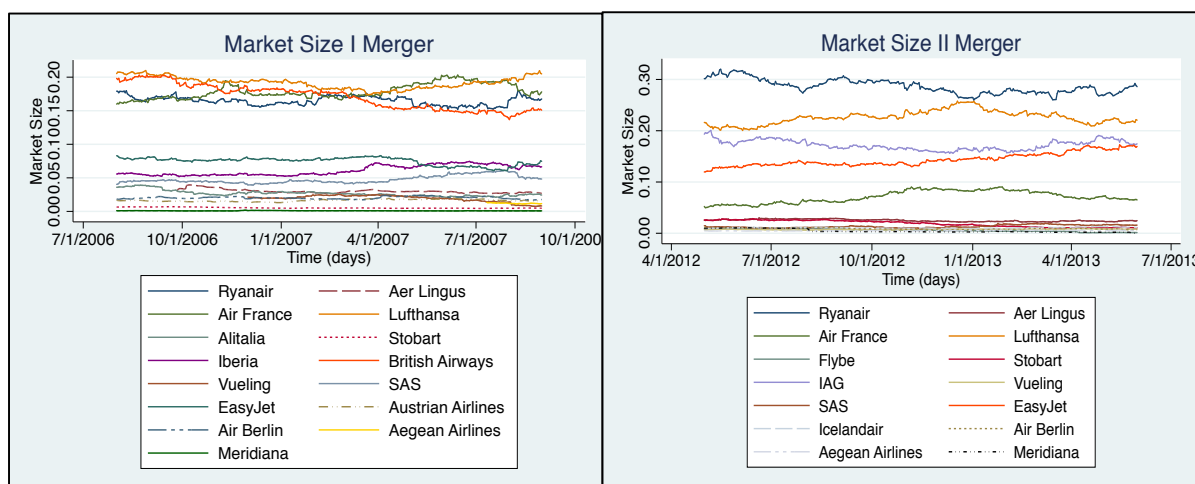


Figure 9: Firms' relative market sizes for the European airline industry both in 2006/2007 and 2012/2013 periods.

HHI	I Merger	HHI	II Merger
	1364		1905

Table 1⁴⁰: HHI measures for the two merger cases.

Focusing on the two companies involved into the mergers, it is evident from Figure 9 that Aer Lingus holds a very low relative market value in both cases (between 2.7% and 0.4% for both periods) while Ryanair is always amongst the biggest firms, even increasing its relative weight in the second case of 2012 (from 15% to 18% in 2006 while increasing its market shares until 30% in 2012).

This kind of comparative analysis is of particular interest: as we have already discussed in the introduction to this work, the main argument that Ryanair claims in the 2012 notification to the European Commission is that the situation in the European airline market has changed from the 2007 decision. It argues that, in the 2012 situation, it became even more beneficial for consumers that both Ryanair and Aer Lingus operate together to face the new bigger competitors that emerged following the concentration trend of the European airline industry. In the II merger decision the major airlines pointed by Ryanair exactly coincide with the main companies identified in Figure 9 for the II merger panel:

³⁹ The reference classification is the one in use at US Department of Justice – Antitrust Division according to which if $HHI < 1000$ the market is non-concentrated; if $1000 < HHI < 1500$ the market is a bit concentrated; if $1500 < HHI < 2500$ the market is moderately concentrated and if $HHI > 2500$ the market is highly concentrated. Moreover, mergers which increase HHI of more than 200 points in highly concentrated markets are presumed to be anti-competitive according to the Horizontal Merger Guidelines.

⁴⁰ Own calculations.

“Ryanair highlights first, that Europe’s flag carriers are inexorably consolidating into five large scheduled airlines groups led by Air France, British Airways, EasyJet, Lufthansa and Ryanair”

(DG Competition, 2013 p. 17).

As the weighted average abnormal returns measure $WAAR_{i,t}$ is concerned, the analysis provides its values for both merger cases of 2006 and 2012 as well as for the two subgroups of merging firms and competitors. Following the theory discussed previously in section 2.1.1, we expect the above profitability measure to be positive for merging firms group ($WAAR_m$), i.e. Ryanair and Aer lingus. In fact, an acquisition is potentially always profitable for merging firms otherwise there would be no aim for it. As for competitors’ profits at the day of the acquisition announcement, we expect a positive effect of the mergers ($WAAR_c$): indeed, this would be in line with the European Commission decisions of 2007 and 2013 not to clear the two notified mergers whose anti-competitive effects are identified by positive gains for competitors in our framework.

Overall, we obtained some specific values for the $WAAR_{i,t}$ measure which are summarized in Table 2.

		1 day	3 days	5 days	11 days
I Merger	$WAAR_m$	0.1145 (0.68)	0.1222 (1.26)	0.1134 (1.51)	0.1038* (1.63)
	$WAAR_c$	0.0081 (0.03)	-0.039 (-0.26)	-0.0220 (-0.19)	-0.0125 (-0.13)
II Merger	$WAAR_m$	-0.1047 (-0.72)	-0.1082 (-1.30)	-0.1057** (-1.64)	-0.0868** (-2.00)
	$WAAR_c$	-0.4093 (-1.19)	-0.4324** (-2.18)	-0.4242*** (-2.78)	-0.4271*** (-4.22)

*Table 2: Results for the weighted average abnormal return measure for 2006 and 2012 mergers announcements for both merging firms and competitors. We report the mean and t-statistic (in parenthesis) of the WAAR measure. The significance levels are represented at 1%, 5% and 10% levels by ***, **, * respectively.*

As we can see, in the I merger case we obtained all values with the expected positive sign for the date of the public bid, namely 5th October 2006 (1 day): a positive effect of the merger is depicted for both groups of firms even if it results to be non significant. Once robustness checks for bigger periods of time are considered, the positive expected sign persits for merging firms while it turns negative for competitors. Nevertheless, the latter values are found to be all non significant except for 11 days value for merging firms which results statistically significant at 10%: overall, the null

hypothesis of no significant abnormal performance during the periods considered cannot be rejected. According to our theory, this seems to suggest that the merger announcement of 5th October 2006 did not play such an important role on investors expectations. The potential acquisition might be classified as a *welfare-neutral merger* according to the estimated $WAAR_{i,t}$ measure. This is not in line with our expectations since the European Commission declared the merger notification of 2006 to be incompatible with the Merger Regulation N 139/2004 given its anti-competitive consequences on the relevant market on the basis of corroborated economic theory discussed in Chapter 1. Nevertheless, our results do not contradict the European Commission 2007 decision.

In the II merger case, instead, $WAAR_{i,t}$ measure indicates different results: for merging firms' profitability we detect negative values which become even significant when considering 5 and 11 days impact which might imply the merger to be on average *unprofitable*. This is quite surprising if compared to our hypothesis since it is reasonable to assume each merger to be profitable for merging companies. Nevertheless, recalling the analysis of Figure 7, an in-depth investigation of merging firms group in 2012 shows how the two companies stocks are behaving in opposite ways in the period around the merger proclamation: indeed, Aer Lingus is increasing its stock value while Ryanair performs negatively in the same period. We can thus conclude that the negative result obtained for the profitability measure of merging firms has to be referred mainly to Ryanair's investors expectations, given also the weight that Ryanair holds in terms of market value when compared to Aer Lingus. It seems the case that, while for Ryanair's shareholders the acquisition was not perceived as profitable (or maybe likely), Aer Lingus' investors expected potential gains from the proposed merger. Indeed, it can be argued that Ryanair investors' expectations might have been negatively influenced based on past behavior of the Commission, given that the 2012 case was the second attempt for the low-cost airline to acquire its competitor Aer Lingus after a first failed trial. Moreover, the negative abnormal performance of the bidder firm might indicate that investors' expectations on that acquisition were in the sense of a costly effort (Eckbo, 1983 p. 9).

When considering the results for competitors' profitability measure in 2012 case, the outcome is even more unexpected. The obtained values for the weighted abnormal returns appear to be always negative suggesting us to define the acquisition as a *pro-competitive merger*, according to our framework. Going into the details, for the date of 19th June 2012 announcement, i.e. *1 day* in Table 2, the negative measure does not display a significant effect; as soon as lagged checks are concerned, the values for aggregate days remain still negative but increase their significance the larger the period concerned. When considering, for instance, the average value of -0.4271⁴¹ for the 11 days timespan around the merger announcement, this latter results as a very significant impact

⁴¹ This value has to be considered as a decreased weighted average effect of 0.43 EUR on competitors' aggregate stock portfolio. Indeed, it represents a profitability indication for competitors' stock value on the 11 days time period around 19th June 2012, i.e. the announcement date of the merger between Ryanair and Aer Lingus.

on the distribution of abnormal returns for competitors. In the light of the above, it might be reasonable to assume a postponed and/or anticipated effect in the financial market which made the single event day impact non significant. According to Eckbo (1983 p. 4) and differently from the prediction of the collusion hypothesis, competitors' negative reaction at the date of merger announcement seems to be in line with an efficiency hypothesis: according to this latter, competitors may react negatively facing an efficient merger bringing lower costs for the merged entity which will become a tougher competitor. Moreover, another possible explanation for competitors' negative gains at the date of the merger announcement might come from the increased probability of predatory behavior of the merged entity expected by competitors (Eckbo, 1983 p. 13). Ultimately, it could be speculatively argued that, given the first failed attempt of the same takeover, competitors might have believed that a second identical trial would have been reposed only in the case of drastic real changes in the proposal which would have made the clearance of the acquisition more likely 5 years later. According to this premise, rivals evaluated the merger as hurting their interests.

Conforming to our findings, the notified merger of 2012 seems to be inconsistent with an *anti-competitive* classification as it has been judged by the European Commission on the 19th June 2012: in consonance with our framework, uncleared anti-competitive mergers should be reflected by increasing competitors' profits in the financial market at the day of the public bid. In this case, the empirical conclusions derived by the financial market reaction greatly differ from the European Commission decision.

An in-depth discussion about the above mentioned results is offered in the conclusion of the present work.

2.2 Existing literature

In the present work, the methodology used to analyze the impact of merger announcements is the event study analysis. This latter is particularly indicated for studies whose aim is to assess both the direction and the magnitude of an event effect on firms value, such as acquisition announcements. The idea beneath this method is to capture the news impact on stocks value as the variability of the equity adjusted by a market-wide effect. The success of this kind of analysis originates in the accounting and financial research field with the publication of two landmark papers by Ball and Brown (1968) and Fama, French, Jensen and Roll (1969). These latters study the speedness of adjustment of stock prices to new information entailed in the stock split: positive correlation is found amongst these two variables. Their studies interpret the forecast error of the regressions as the new information captured by companies at the month level: we perform a similar analysis with daily frequency. The outcome of their study confirms that companies anticipate the effect of income

numbers information thus providing evidence in favor of the efficient market hypothesis (EMH)⁴² according to which split information implications are fully reflected into stock prices. This conclusion contributes to give reliability on event studies approaches analyzing financial market data. Since the appearance of the above studies, this methodology of research has enlarged including a bigger range of science fields from economics to political science, from history to law analyses.

Beyond the Market model adopted within the present thesis, the event study methodology makes use of other types of models that we are going to display briefly. Amongst these, the CAPM⁴³ is a very well corroborated instrument. The idea beneath this model is that investors should be compensated either for the time value of investing money and for the risk that they are willing to take when investing. In addition, another commonly reported model in the literature is the Arbitrage Pricing Theory⁴⁴ (APT). This latter reports that a stock price is the result of a linear function of some macro-economic factors or indexes plus a disturbance error with zero mean on average which represents the security risk. The choice of the Market model is considered the most indicated for the present empirical work for many reasons. Firstly, this method is the one used in Duso et al. (2007) to which our work is inspired. Secondly, when compared to the CAPM it is evident that our purpose is not to evaluate the composition of the stocks but rather to find the firm-specific event effect on stock prices. The APT, instead, follows in principle the same functioning of the Market model except for the fact that it entails a less restrictive bundle of assumption and, thus, less informative outcome.

There exists a huge number of published event studies that space throughout a very broad range of fields which confirms the importance and reliability of this kind of methodology⁴⁵. Nevertheless, the main idea underling our study that horizontal mergers inducing competitors losses will tend to be pro-competitive, thus increasing consumer surplus, has been firstly adopted by Eckbo (1983) and Stillman (1983). In their studies, the authors consider the implications of the traditional collusion hypothesis according to which the incentives to coordinate prices and production increase in a competitive environment with few actors. The merger-induced reduction in the number of rivals in the industry will make it easier for companies to monitor each others'

⁴² It has been specified in the finance literature the existence of three types of verification of the efficient market hypothesis: 1) *the weak form* entails the fact that present stock prices reflect the historical series of prices. It follows that investors cannot generate abnormal returns on the basis of past performance patterns. 2) *the semi-strong form* suggests that stock prices fully reflect not only past information but also all publicly available information. 3) *the strong form* affirms that all private information is fully reflected into securities' price.

⁴³ The CAPM equation is the following: $r_a = r_f + \beta(\bar{r}_m - r_f)$, where r_a represents the return of security a , r_f is the risk-free part of returns and $\bar{r}_m$ stands for the market average performance of the security.

⁴⁴ The APT equation is the following: $r_a = \alpha_a + b_{a1}F_1 + b_{a2}F_2 + \dots + \varepsilon_a$, where r_a represents the return of security a , F_n are the macro economic factors that influence the stock returns and b_{an} are the specific sensitivity of each factor on a 's return.

⁴⁵ Indeed, Kothari and Warner (2005) report that in the time framework from 1974 to 2000, considering only five of the major financial journal, the number of studies reaches that of 565 articles. Amidst the main research fields of event studies, we could evoke mergers announcements impact, capital market effect reactions on terrorist attacks, introduction of safe food regulations, corporate headquarters relocations, beef price changes, announcements by B2C companies, new hotel openings and more over. Furthermore, a recent literature by Novy-Marx (2014) has started to analyze capital market abnormal reactions to politics, weather, global warming, sunspots and the stars.

actions and thus collusion will become more credible. The gains of potential collusion are reflected in the increased market value of rivals' stocks at the day of the announcement of the merger as well as in the surrounding period. Differently from what is analyzed in the present work, Eckbo (1983) focuses on the mining and manufacturing industries and he deepens in his study the effect of two kinds of announcement: the merger announcement as well as the complaint communication by part of the antitrust agency. According to the collusion hypothesis⁴⁶, the author expects a positive and a negative reaction by part of competitors at the day of the merger declaration and at the disapproval divulgation, respectively, whenever the acquisition results as anti-competitive. The reverse is true for pro-competitive takeovers. We decided to analyze in our work only the financial market reaction at the date of the mergers announcement, following Duso's (2007) approach, with the awareness of the fact that our purpose is to classify mergers from an EC-independent point of view, looking at the competitors' reaction before any divulgation on the EC attitude towards the cases is released.

Stillman (1983), instead, studies a slightly different research question within the same framework of anticompetitive/price increasing horizontal mergers. Indeed, the author is interested in analyzing a bundle of uncleared mergers from 1964 to 1972 in the United States, considering the potential effects on competition in case they had not been challenged by antitrust agencies. Similarly to our framework, the analysis makes use of daily stock market data of rivals of the 11 mergers of interest considering the direction of abnormal returns as indicative of the expected change in market competition. While we are interested in investigating the market reaction as a proxy for an alternative merger classification from the European Commission's, the author's aim is to test whether, at the light of the challenged mergers, Department of Justice (DOJ) and Federal Trade Commission (FTC) are really prosecuting anti-competitive acquisitions. The results do not reject the null hypothesis of no anticompetitive performance; then, it is concluded that apparently the American antitrust enforcement agency action has resulted unneeded, namely the acquisitions in question were to be considered as pro-competitive⁴⁷.

Furthermore, the most important paper for the delineation of our empirical work is represented by Duso et al. (2007) investigation. Differently from our purpose, their study is aimed at testing the political economy of the European merger control by investigating the determinants that might influence the Commission decisions. Despite this divergence in aim with respect to ours, the authors firstly estimate a classification of potential type I and type II errors by looking at competitors' stock price reaction in the financial market at the date of the merger announcement on

⁴⁶ Evidence for the collusion hypothesis is not verified by the data in Eckbo's work while some indications for the efficiency hypothesis are attested. Indeed, Eckbo (1983, p.3) defines as "productive efficiency theory" the fact that horizontal mergers may entail cost-reducing technologies for merging firms. These gains may be reflected either by a positive response by rivals (which are close competitors) indicating potential opportunities to increase their productivity; or, it can be the case that rivals respond negatively suggesting expectations that the new more efficient and competitive merged entity could lower prices and make the rival's business unprofitable.

⁴⁷ Eckbo, et al. (1985) justify this failure by part of the government pointing at the existence of legal constraints at the time of Stillman's and Eckbo's samples which prevented the competent authority from acquiring all the needed information to carry on accurate investigations. The authors report that the later enforcement of the Hart-Scott-Rodino Act in 1978 lessened those restraints.

a sample of 167 EU mergers from 1990 to 2002. Once provided with an “optimal” classification by stock reactions, this latter has been compared with EU decisions and the discrepancies (if any) have been evaluated as mistakes: type I error has been identified whenever the merger has been blocked and was evaluated as pro-competitive by the financial market reaction and vice versa for type II error. This way of proceeding is replicated in the present work based on the two European merger cases of analysis with the simpler aim of providing an alternative standpoint with respect to the European Commission decisions. Thus, our inspection is intended to investigate financial market reaction of competitors only on the two acquisition cases of interest and compare whether the EC decisions have been in line with competitors’ expectations about the competitive effects of the acquisitions, at the day of the merger announcements. Instead, in their study, Duso et al. further test the impact of both merging firms and competitors profits on the likelihood of type I and type II errors by using probit estimations. Additional variables are included in the regressions accounting for institutional and political economy factors which might play an important role in determining European Commission decisions, such as country and industry effects and/or procedural and market definition issues⁴⁸.

Concerning more specifically the airline industry, the event study approach is not unusual in the literature. Indeed, diverse attempts have tried to analyze merger competitive consequences by making use of financial market reactions. Amongst other, a similar analysis to the one developed here has been provided by Friesen (2005). The author focuses on the friendly merger effects between Air France and KLM in 2004 on their own value by looking at the reaction of either merging firms and competitors in the financial market. The intent in its analysis is to highlight the effect of the merger on competition by looking at each airline’s reaction. Evidence is supplied for an insignificant increased value for the acquiring firm, in line with a large body of the literature, while the target firm enjoyed a relevant value increase. Even if analyzing a different approach within the airline industry in our work, we found similar pattern in the merging group in 2012 for which we detect a decisive increase of Aer Lingus’ stock price at the day of the merger announcement⁴⁹. As for rivals’ gains, the author analyzes each competitor performance separately, differentiating the method from what is studied in the present work⁵⁰: some airlines, such as British Airways and Iberia, increased their stock value while others such as Lufthansa performed negatively abnormal returns on the day of the merger announcement, even if the result confirmed to be non significant. At the light of this fragmented reactions, the author argues that there is no

⁴⁸ Duso, et al. (2007) provide evidence for some 28% and 23% of type I and II error, respectively. These results suggest that the European Commission does not account only for consumers’ interest when making its decisions but other important factors play a significant influence. Amongst influencing factors, institutional and political environment do matter as well as procedural aspects. Contrary to what has been largely argued, the authors do not find any confirmation of the fact that the European Commission is sensitive to competitors’ interest at the hurt of consumers.

⁴⁹ See Figure 7 for details. The 2006 merger situation depicts a similar scenario with Aer Lingus increasing its value of 115% and Ryanair decreasing its stock price of 2% (namely, increasing its value of 98%) at 5th October 2006, with respect to the day before.

⁵⁰ Indeed, in the present analysis we are interested in obtaining an average profitability measure for competitors’ group as a whole.

evidence for the market power hypothesis while it seems that efficiency theory might explain some of the contrasted rivals outcome.

Other studies focused on the airline industry, such as Knapp (1990) investigation of 9 US horizontal mergers in 1996. The author finds significantly higher positive returns for acquired firm (around 25% on balance) compared to the bidder firm (around a range from 6% to 12%). Moreover, competitors' abnormal returns are evaluated and evidence for a positive reaction (from 3% to 6%) is provided when considering a time frame of 30 days around the event day: these results are in line with the market power hypothesis. Another study by Slovin et al. (1991) provides evidence from a sample of 42 airline companies from 1965 to 1988. Their outcome provides positive average abnormal returns for rivals at the date of the publication of merger intention, corroborating the collusion hypothesis implications. An interesting result derives from the study by Singal (1996) on 14 mergers of US airlines from 1985 to 1988 which signals that rivals' gains at the merger announcement range from a -2.08% to 1.85% when considering a time window of 2 days around the merger release. This result, even if corroborated on the US airline industry, seems to leave open some space for interpretation of negative responses by part of rivals as those provided by our work on the European market. Indeed, explanation for them finds a response in the efficiency theory (Eckbo, 1983). Overall, event study research is quite exhaustive as regards American airline industry while European groundwork is still needed.

Alternative calculations for the Market model

Concerning the Market model, there exist in the literature other methods to calculate both the coefficients and statistical significance of abnormal returns than the classical OLS estimation and t-test used in the present analysis, respectively. An alternative procedure is provided by Scholes-Williams⁵¹ (1977) approach. Their adjustment consists in providing an estimation of the coefficients that takes into account the intra-day movements of stock prices and not only closing day values: with an ordinary least-squares estimation we are not able to capture this intra-day effect. However, we opted for the easier OLS specification in the present analysis given the finding in the literature that the bias generated by this methodology does not lead to misspecification of event studies' outcome (Brown, et al., 1985 p. 16).

Moreover, assuming the normality of the abnormal returns distribution is not always without severe implications: sometimes this assumption is not reflected in the reality of the data. This kind of issue tends to be null whenever the sample observations becomes large: in our case we analyze more than 200 trading days and thus we are not concerned with it⁵². An alternative way to check the significance of the results is to simply compare abnormal returns of the event day AR_0

⁵¹ This method is used in the Duso, et al. (2007) analysis.

⁵² Furthermore, the Normal distribution of abnormal returns variables for merging firms and rivals group in our data has been evaluated. The outcome is provided in APPENDIX IV.

with the distribution of abnormal returns AR_t in the control period: the probability of having higher abnormal returns AR_0 than all days in the control period is very low and specifically coincides with $1/(n + 1)$. For instance, by taking a control period of 240 trading days as in our case the above probability is 0.4%.

Furthermore, it is very common in the event study literature to study and analyze more than one event at the same time. This is the case when the sample includes manifold security-event data. It is desirable in this case to aggregate the analysis into only one hypothesis test. In order to do so it is sufficient to sum up all the individual *T-statistics* in equation (8) into an aggregate one and then divide it by the square root of the sample size. A weighted average measure for each security-event combination will be provided. We are not interested in this specific case given the fact that the two mergers analyzed take place within a big timeframe of distance which allows the two acquisitions' announcements to be discussed separately.

Conclusion

In this thesis we have strived to accomplish two purposes. Firstly, we investigated the economic reasons underling the European Commission decisions of 2007 and 2013 on case No COMP/M.4439 and case No COMP/M.6663 which rejected both times the merger proposals of Ryanair to acquire its competitor Aer Lingus. Secondly, we provided an alternative standpoint to evaluate the potential acquisitions with the aim of assessing the takeovers independently from the European Commission judgement and compare the results. Inspired by the research and methodology used by Duso et al (2007), Market model theory has been applied. The main idea underling the analysis stems from the assumption that there exists a negative relationship between competitors' profits and consumer surplus. In other words, the merger effect on competition has been studied analysing competitors' reaction in the financial market at the day of the merger announcements. Positive abnormal returns for competitors suggest, in this framework, that the market is becoming more concentrated and then collusion amongst remaining companies is a more credible option: this is the idea summarized by the "collusion hypothesis". This anti-competitive merger effect of decreasing actors in the market is even more credible in a market with high barriers at the entrance such as the airline industry.

In Chapter 1, it has been underlined the extent to which the new merged entity would have increased its market power on all relevant markets. According to the economic theory, it was emphasized the anti-competitive issues arising from the new highly concentrated market structure. Indeed, the number of monopolies arising after the mergers varied between 22 and 28 in the two cases with all the rest of overlapping routes showing market shares above 60% for the new merged entity. Furthermore, it has been highlighted the closeness of competition between Ryanair and Aer Lingus on routes ex-Ireland due to their similar business structures and the benefits that this rivalry produces in terms of development of new flights and frequencies for customers. Based on strong evidence of past entry behavior of Ryanair on Aer Lingus' routes, the affected companies resulted to be each other closest competitor also for potential competition on those routes served uniquely by one Party at the moment of investigation. It has been further analyzed whether potential entrants' threat on the affected routes could represent a credible competitive restriction able to constrain the merged entity's behavior after the acquisitions: nevertheless, important barriers to entry were found in the Irish market. Indeed, the operational base at Dublin airport constituted a significant impediment able to discourage rivals to profitably operate. In addition, predation and aggressive response strategies were evaluated very likely and credible for a near-monopolist behavior such as the one enjoyed by merging companies after the acquisition approvals. Eventually, potential efficiencies created by the merger have been discussed to asses to which extent they could outweigh anti-competitive effects. Even considering the proposed remedies by part of Ryanair, both notified mergers resulted to create insurmountable competition concerns likely to result in a

competitive harm for consumers. The European Commission decisions resulted to be in line with economic reasoning.

In Chapter 2, we constructed an alternative empirical estimation for the classification of the two mergers. Some important conclusions are derived from this kind of evaluation and its comparison with the outcome of Chapter 1. As the I merger case of 2006 is concerned, the empirical findings do not suggest the adverse provisions addressed by the European Commission in its 2007 decision and confirmed by our theoretical comments. As resulted from the analysis of abnormal returns in the financial market, the merger effect is found to have not such important implications within the European airline overview. The public bid release effect at 5th October 2006 on both merging firms and competitors is in the positive expected direction even if, when controlling for a bigger time span around the event date, the sign is reversed for competitors' gains; nevertheless, results do not show a significant impact on the days analyzed⁵³ suggesting a minor or nul impact of the acquisition disclosure on investors' expectations. This outcome is not in line with the European Commission decision since, in that case, we should have found both values for abnormal returns to display a significant positive impact within the periods considered. Nevertheless, these findings are not completely contradicting the DG Competition and our theoretical investigation result: the merger case No COMP/M.4439 is labeled as *welfare-neutral* according to our empirical classification. Moreover, it is worth to notice that the analysis of the European Commission is focused starting from the definition of the relevant market as single airlines routes, while our empirical analysis considers the relevant market as the European airline industry given that competitors are present at a European-wide level. From this definition, it derives that the merger between Ryanair and Aer Lingus might have had an almost insignificant effect at the European-wide level of competition but it would have entailed detrimental consumer consequences when considering the specific routes served by the two companies, i.e. the majority of routes out of Ireland. Since the European Commission's aim is to guarantee protection on competition dimension to all European citizens, the 2007 decision has been unavoidable.

Considering the II merger case of 2012, instead, the empirical conclusions to be derived are quite different. According to our measure of weighted abnormal returns on the two groups of firms, this acquisition was not considered profitable for merging firms Ryanair and Aer Lingus given the negative coefficients, and in some cases significant⁵⁴, indicated by the analysis. As already addressed from the analysis of Figure 7, we can conclude that the unprofitability of the acquisition was mainly driven by Ryanair's investors. This stunning result is not so unexpected when compared to other outcomes in the literature; indeed, as reported by Duso et al (2007 p. 22-23), low or negative stock reaction for the bidder company seems to suggest an allocation failure of benefits amongst merging firms. Moreover, it could have been the case that the first failed attempt of 2006

⁵³ All values for 2006 merger result to be non significant except for the positive 11 days value for merging firms which shows statistical significance at 10%.

⁵⁴ The $WAAR_m$ measure results to have a significant impact at 5% level when considering a timespan from 5 days around the merger announcement onwards.

played an adverse influence on investors' expectations which evaluated the action as a costly effort by part of Ryanair. Even more surprising is the outcome of rivals' profits: indeed, it seems to suggest that the 2012 notified merger would have been a *welfare-enhancing merger* if the European Commission had cleared the acquisition. Indeed, the value for rivals' profitability emerging from our work is negative and it has a significant impact starting from a 3-day timespan consideration onwards. This finding suggests some further considerations: firstly, other approaches in the literature outline how a negative response of competitors at the day of a merger announcement is not indicating anti-competitive deals while it represents, instead, an estimation for an efficient takeover, offering lower fares, which will make the merged entity a tougher rival. This consideration does not find validation when compared to the economic discussion of the cases made in Chapter 1: indeed, gains from the acquisitions did not result to be such to outweigh the arising anti-competitive effects. Furthermore, as argued by Eckbo (1983 p. 13), negative competitors' reaction might be explained by the increased probability of predatory behavior by part of the merged entity once the acquisition has been cleared. This achievement coincides with the outcome reported in the economic discussion in the first part of this work where predation was found to be a likely strategy for the new merged company. On the other hand, the 2012 empirical result reconciles Ryanair's view when arguing that the competitive environment in 2012 was drastically changed with respect to the 2007 situation: indeed, according to our framework, empirical results point to the classification of the 2012 proposed acquisition as a consumer surplus enhancing deal.

As an overall conclusion, the combination of theoretical and empirical outcomes seems to be contradictory in some parts. While the theoretical analysis finds valid economic explanations for the twofold refusal of the attempt by part of Ryanair to acquire its rival Aer Lingus, the empirical computation seems to leave open some space of reasoning to justify the persistence in Ryanair's effort to acquire its competitor within the aim of the two notified merger cases No COMP/M.4439 and No COMP/M.6663. On the other hand, as already mentioned, the EU decisions have been investigated starting from the definition of the relevant market on an O&D route dimension and, thus, differently from the European airline industry considered in the empirical analysis. As conciliatory outcome, it might be argued that the definition of the relevant market played an important role in determining the competitive consequences arising from the two mergers analyses, as also found in the literature by Duso et al. (2007). Moreover, since the empirical part is analyzed within the European airline industry, it might be the case that complementary effects (see section 1.3.1) amongst Ryanair's and Aer Lingus' routes would have played a role. As suggestion for further analysis, it might be interesting to adapt and reconsider the present empirical analysis and its theory on a route-by-route context and assess whether discrepancies arising in the present work are still evident or not.

Overall, it must be cleared that these empirical results have to be considered only as informative and should be developed in a more detailed and deepened manner before deriving any policy implication from it.

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