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Mergers and Business Model Assimilation: Evidence from Low-Cost Airline Takeovers

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Abstract

This paper examines mergers that lead to an almost immediate replacement of the target firm's business model in favor of that of the acquiring firm. We examine the post-merger behavior of the two leading European dedicated low-cost airlines, EasyJet and Ryanair, each acquiring another low-cost airline, respectively Go Fly and Buzz. We find that both takeovers had an immediate and sustained impact on both the pricing structures and the extent of inter-temporal price schedules used on the acquired routes, with early booking fares noticeably reduced and only very late booking fares increased. The analysis suggests that the takeovers had a net beneficial effect as a consequence of the introduction of the acquiring firms' business models and associated yield management pricing systems.

JEL classification: L11, L13, L93

Keywords: Merger; Business model; Low-cost airline; Price discrimination; Yield management

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1. Introduction

Low cost airlines ("LCAs") have revolutionized passenger air travel in recent years, bringing "no frills" operations to a broader public generally at substantially lower prices than traditional full-service airlines ("FSAs"). In Europe, their rapid growth has been made possible by the civil aviation industry being fully liberalized in 1997, allowing any airline registered in any European Union (EU) member state to serve any city-pair inside the EU.[1] In the process, the industry has been radically shaken up as LCAs expanded their operations, opening up new routes with new destinations and greatly extending demand with their low prices, forcing the traditional airlines to respond by adapting their own operations and prices to compete more effectively.[2] As a consequence, passengers appear to have been the real winners from this revolution; enjoying a wider choice of routes, more frequent flights, and lower prices.

Nevertheless, as the sector matures and consolidates, there is a concern that price competition might diminish. In particular, it is recognized that mergers between airlines may allow efficiencies to be realized, but will this be at the expense of higher prices and less choice for consumers? The recent decision by the European Commission to block the proposed merger of Ryanair and Aer Lingus highlights how seriously this concern is now taken.[3] The central question examined by this paper is whether previous mergers involving LCAs have had such an effect. Specifically, this paper assesses the impact on prices of the first two important mergers involving European LCAs: EasyJet's acquisition of Go Fly in 2002 and Ryanair's acquisition of Buzz in 2003.

Although other mergers among LCAs have occurred in the past (e.g. Southwest's acquisition of both Morris Air and Muse Air), previous studies of airline takeovers have largely focused on FSAs in the US (e.g. Borenstein 1990; Werden et al. 1991; Kim and Singal 1993; Morrison 1996; Richard 2003; Peters 2006). More generally, there has been a large number of studies examining the airline industry because of its distinctive features and availability of detailed data, but again largely from the perspective of FSAs. For instance, previous studies have considered effects relating to multi-market competition (Evans and Kessides 1993; 1994), frequent flyer programs (Lederman 2008), price dispersion (Borenstein and Rose 1994), price discrimination (Stavins 2001), dynamic pricing (McAfee and Velde 2006) and general pricing trends (Borenstein and Rose 2007). Existing studies on LCAs have mostly focused on

[1] A city-pair is used as synonymous with the airline market for two cities (e.g., London and Rome). It generally includes more than one route, each identified by a unique airport-pair combination (e.g., London Heathrow/Rome Fiumicino and London Stansted/Rome Ciampino). In such markets, products are thus differentiated.

[2] As Gagnepain and Marin (2006) show, greater competition in the wake of deregulation may also have brought about productivity improvements and other efficiency benefits.

[3] See "Commission prohibits Ryanair's proposed takeover of Aer Lingus", European Commission press release IP/07/893, 27 June 2007.

their entry patterns and effects on FSA incumbents (Whinston and Collins 1992; Windle and Dresner 1999; Goolsbee and Syverson 2008). An exception is Koenigsberg et al. (2008), which examines intertemporal pricing by LCAs to consider whether offering discounts for very late bookers as well as early bookers would enhance profits.

The present paper seeks to extend this literature by examining the impact of the aforementioned two airline mergers on quoted on-line fares, the key means by which tickets are purchased for LCAs.[4] Drawing on a novel and very extensive dataset of posted prices taken at frequent intervals over a prolonged period before each flight departs, we are able to build up a very detailed picture of the pattern of prices facing consumers for each route and each flight operated by each airline serving routes from the UK to other parts of Europe. This data covers all main LCAs as well as competing FSAs providing return flights over a 37-month period (from the start of June 2002 through to the end of June 2005).[5]

According to Borenstein and Rose (2007, p.30), business-model experimentation in pricing, logistics, competitive strategies and organizational form has been a key feature of the US airline industry following deregulation. To the extent that effective yield management systems enable a better alignment of the evolution of actual demand relative to forecast demand for individual flights, they constitute an important management and strategic tool. A novel feature of our analysis is that we consider how the business model and associated approach to yield management of the acquiring firms may have impacted different consumer types. Specifically, we examine how the mergers affected airlines' temporal pricing profile in order to compare the effects on "early bookers" as opposed to "late bookers". Along with consideration of other aspects affecting consumer welfare in the form of the number of routes served and flight frequency, we can thereby assess whether the mergers are likely to have had a beneficial or detrimental effect on some, most or all consumers.

We provide some illustrative cases to show the effects at a very micro level before moving on to present more general empirical evidence using "propensity score matching" and "differences-in-differences" estimation techniques to compare the fares in the acquired routes in the pre- and post-merger periods.[6] Four key findings emerge from our analysis. First, straight after concluding the takeovers, the acquiring firms reduced most types of posted fares, especially early booking fares. The only notable exception was a sharp increase in Ryanair's posted fares for the day immediately before departure on the

[4] For instance, EasyJet reported that by 2003 around 97% of purchases were made on-line, moving to 98% by 2005 – see http://www.easyjet.com/common/img/UBSTransportConference19thSept05.pdf.

[5] Unlike the basis of US studies (with data available from the Department of Transport Databank), there is no sample available of actual ticket prices paid in Europe; hence the focus and novelty of using posted prices in the present study. See Section 4 below for further details.

[6] See Cameron and Trivedi (2005) for a discussion of these methodologies.

routes taken over. Second, in the 24 months after the takeovers, the fares of the acquiring firms remained largely stable, with only minor upward adjustments of EasyJet's late booking fares. Third, and related to the two previous findings, the acquiring firms altered pricing in a consistent manner for the acquired routes, indicating that they each introduced their own specific approach to *yield management* (i.e. the means of selling seats amongst differentiated customers with a view to maximizing profit for each flight) involving a more intense inter-temporal pricing strategy with early bookers paying lower prices than previously but very late bookers paying more (Gale and Holmes 1993) – pointing to a different impact arising from the merger for different consumer types. Fourth, given that only a small proportion of seats are sold by LCAs in the last week before departure,[7] the general price reductions suggest that, despite higher prices for some consumers, both takeovers may have significantly benefited consumers in aggregate. This view is supported by the fact that after the takeovers very few routes were terminated and Ryanair increased the number of flights it operated on its acquired routes while EasyJet maintained them at approximately the same level as prior to the merger.

Our findings thus point to an interesting aspect regarding the nature of efficiency benefits arising from a merger. Most previous studies of mergers point to efficiency benefits in terms of organizational and production restructuring, often taking considerable time to be realized (Paulter 2003; Focarelli and Panetta 2003). However, in our case we find efficiency and pro-consumer benefits are quickly realized due to the acquiring firm immediately imposing its own business model and yield management system on the acquired routes' operations in order to maximize the productivity of its assets (i.e., airplanes' capacity utilization) and revenues. This is borne out in our analysis not just by the use of a more intense inter-temporal pricing profile but also through its effects in serving to improve load factors and increasing the numbers of passengers carried on each flight.

In other words, a merger may allow for a different and perhaps superior business model to be quickly implemented which may then immediately start providing consumer benefits. In terms of merger analysis, this suggests that competition authorities should pay close attention to the character and competitive positioning of the acquiring firm and to whether it is likely to operate the acquired business in respect of its commitment to its particular business model, which may offer consumer benefits even if the merger significantly increases market concentration.

[7] For instance, Barlow (2000) suggests that less than 20% of tickets are sold in the final week before departure. Similarly, working with data provided by EasyJet, the examples provided by Koenigsberg et al. (2008) show less than 15% of tickets sold before the final week. Moreover, with average load factors for LCAs reported by the European Low Fares Airline Association being 83% for 2006, it can be expected that many flights are fully booked in advance of the last week before departure – see http://www.elfaa.com.

2. Two Contrasting LCA Mergers

Ryanair and EasyJet, as two of the pioneers of low-cost airline travel in Europe, have also become two of Europe's largest airlines. Founded in 1985, Ryanair expanded its route network rapidly following liberalization of intra-EU air services, increasing its passenger numbers from 2.25 million in 1995 to over 40 million by 2006. EasyJet, established in 1995, has similarly expanded rapidly; taking its passenger numbers from 3.1 million in 1999 to 33 million in 2006.

The low-cost carrier business model that Ryanair and EasyJet share is based on the "no frills" concept advanced by Southwest Airlines in the US, centered on stripping out and avoiding all the complexity costs associated with traditional full service airlines (FSAs). This business model has several notable features: (i) using a simple pricing structure with one passenger class and fares only covering basic transportation (with optional paid-for in-flight food and drink); (ii) relying on direct selling through Internet bookings with electronic tickets and no seat reservations; (iii) operating simplified routes to often cheaper, less congested airports (with point-to-point rather than hub-and-spoke networks); (iv) employing intensive aircraft usage (typically with 25-minute turnaround times); (v) having employees working in multiple roles (e.g. flight attendants cleaning the aircrafts and acting as gate agents); and (vi) utilizing highly standardized fleets (with a maximum of two different aircraft types).

Furthermore, in contrast to the usually very complex pricing structures operated by FSAs (with price discrimination on each flight across multiple service classes and booking classes, utilizing "fences" like minimum stay requirements and date/route change penalties), for Ryanair, EasyJet and other LCAs segmentation of prices is essentially made on the basis of just two variables: first, the date of booking, with the lowest fares generally available several weeks/months ahead of the scheduled departure date and then rising as the departure date draws closer (i.e. inter-temporal price discrimination, rewarding early reservations and with fares increasing as the plane fills up); second, the effective demand for a specific flight such that typically early morning, late night, and mid-week and off-season departures are lower priced than for flights during peak-travel periods (Piga and Bachis 2007).

Faced with the need to compete with LCAs (principally on short-haul flights) and hoping to curtail their growth, many FSAs opted to launch their own no-frills airlines. In particular, British Airways launched Go Fly in 1998 and KLM launched Buzz in 2000. Yet, unlike the dedicated and highly effective LCA business model used by specialist LCAs like Ryanair and EasyJet, and despite access to the parents' expertise and strong financial backing, the spin-off nature of the FSA-led LCAs tended to compromise (or at least restrict) their operations. First, in order not to cannibalize the parent's core business, the spin-off

operations generally did not operate in direct competition with their parent's FSA business; so that rather than serving primary routes they were typically obliged to serve secondary routes. Second, as a legacy of their parent's FSA model, costs could not always be pared down to the ultra-low level of the leading dedicated LCAs, resulting in them often adopting a differentiated, hybrid-type position offering "some frills" (e.g. allocated seating and more leg room), and serving to attract a higher proportion of business travelers.

Nevertheless, within two years of its launch, Go Fly achieved a modest profit. Yet, in June 2001, British Airways opted to sell the business for £110m as a private-equity backed management buyout. As a stand-alone business, Go Fly grew quickly and profitably the following year, becoming the third largest LCA in Europe (after Ryanair and EasyJet). In May 2002, EasyJet announced its intention to buy Go Fly. Having previously achieved all its growth organically, EasyJet saw the opportunity to nearly double its size (at least in routes covered) by acquiring an airline with largely complementary operations (see below), using different UK bases, and overtake Ryanair as the largest European LCA. Following merger clearance from the UK authorities in July 2002,[8] EasyJet completed the acquisition for £374m in August 2002. Go Fly continued to operate flights independently until mid-December 2002, after which its website was shut down and EasyJet started to operate on all of Go Fly's former routes.

In contrast to the relative pre-merger success of Go Fly, Buzz was incurring significant losses (estimated at €1m per week) by early 2003 and its parent, KLM, was seeking to sell the "financially distressed" operation; even though by then it had become the third largest LCA in Europe (but still considerably smaller than Ryanair and the merged EasyJet/Go Fly enterprise). In February 2003, Ryanair announced its intention to acquire Buzz and fundamentally restructure the business – making 440 job redundancies (out of a total staff of 610), retaining only 13 of the 24 routes operated (including 3 substituted routes), and canceling all operations for the month of April 2003 while retraining Buzz personnel and agents in Ryanair policies and procedures. With regulatory approval granted in April 2003, Ryanair purchased Buzz for £15.1m, consequently increasing its share of slots at Stansted airport from 33 to 49.5 per cent – see below.[9]

[8] In advising the UK Secretary of State for Trade and Industry, the Office of Fair Trading noted that while the merger would create a substantial market share for the merged entity on some overlapping routes (e.g. Edinburgh/Belfast at 90 per cent with 31 per cent incremental rise), it took the view that all overlapping routes would remain contestable, with competitive choice across destinations and among carriers along with low barriers to entry sufficient to ensure that the merger would not substantially lessen competition. See http://www.oft.gov.uk/advice_and_resources/resource_base/Mergers_home/mergers_fta/mergers_fta_advice/easyjet.

[9] Details of the routes operated by Buzz, in respect of which ones were continued, substituted or terminated after the takeover, are available on request. For the sake of ensuring like-for-like pre- and post-merger price comparisons, in the evaluation of the takeover we only use the routes that were continued.

3. Possible Anti-Competitive Effects

In examining how the takeovers affected the pricing structures of the acquired firms and the routes operated, we seek to shed light on whether the takeovers facilitated the acquiring firms' ability to unilaterally exercise market power and raise fares.[10] From a theoretical perspective, in oligopolistic markets a merger amongst directly competing firms is likely to result in raised prices unless there are significant efficiency benefits associated with the merger – see Farrell and Shapiro (1990; 2001) for the Cournot case and Denekere and Davidson (1985) for the Bertrand case with product differentiation.

An important exception to the latter theoretical result is where not all firms in an oligopoly are direct competitors with each other. For instance in Levy and Reitzes (1992), geographical differentiation is represented in the form of products located along a circle line and thus, two adjacent products are closer substitutes than more distant ones. In this case, only a merger that involves neighboring products raises prices. Accordingly, the manner in which airlines differentiate from each other and whether they compete directly ("head to head") may take on some importance in respect of the price effects resulting from any merger. In practice, airlines differentiate their products along a number of dimensions, the most notable of which is the choice of a route's endpoints, i.e., the geographical differentiation of an airline's network.[11]

Therefore, the evaluation of the merger between two airlines can hinge on the proximity of their products as well as the extent by which cost-saving synergies can be realized (given that the presence of sunk costs means that entry barriers likely exist at least to some degree). On the former aspect, two airlines can be perceived as highly differentiated if their networks do not overlap, i.e., they operate in independent city-pairs markets. In principle, this would mean that their merger leaves the competitive situation unaltered.

With regard to the Go Fly/EasyJet and the Buzz/Ryanair takeovers, either full or partial overlap characterized about one third of the routes operated by the target companies.[12] Although in this situation it would seem probable that the mergers could facilitate the exercise of market power by the acquiring firms, the decision to allow both mergers could still be justified on at least two grounds. First, the overlapping routes could be positioned in competitive city-pair markets where many other options are

[10] That is, we do not address the issue of coordinated or collusive effects.

[11] Another strategically important characteristic is the time of the day at which a flight departs, which can influence whether airlines pursue a strategy of minimum or maximum differentiation (Borenstein and Netz 1999). It may also affect an airline's ability to engage in second-degree price discrimination (Gale and Holmes 1992; 1993). Furthermore, the frequency of flights on a route may directly influence the departure time of flights, which in turn affects travelers' welfare (Richards 2003).

[12] Ryanair continued only one of Buzz's overlap routes; all the others were substituted with Ryanair's routes. This accounts for why we carry out no specific analysis on the price effects of the overlap routes in this merger.

available to passengers willing to travel, say, from London to Rome; an aspect we develop and discuss in section 5.3. Second, the takeovers may bring about cost-saving synergies that are revealed by a drop in fares in the post-merger period: an issue that is central to this paper in regard to business model assimilation and the overall impact on prices.

4. Data Collection

Our analysis is based on primary data on fares and secondary data on routes traffic. Starting in May 2002, an "electronic spider", which connected directly to the websites of the main LCAs in the UK (namely, Ryanair, EasyJet, Go Fly, Buzz, Bmibaby and MyTravelLite), collected all the fares and the associated flights' characteristics used in this study. The collection of fares for flights operated by FSAs (covering British Airways, BMI British Midland, Air France, Lufthansa, KLM, Alitalia, Iberia, and Czech Airlines) started in March 2003. This data covers fares only for the flights that the FSAs operated on routes similar or identical to those where a LCA also flew.[13]

It is important to stress that our reference to fares, and as a key difference with previous airline price studies, is to on-line posted prices and not samples of actual transaction prices.[14] Even so, we control for changes in the size of the carriers' operation on a route by using monthly data on an airlines' number of flights and passengers (see below).

To account for the heterogeneity of fares offered by the airlines at different times prior to departure, the spider collected the fares for departures due, respectively, 1, 4, 7, 10, 14, 21, 28, 35, 42, 49, 56, 63 and 70 days from the date of the query. Henceforth, these will be referred to as "booking days". Thus, for every daily flight we managed to obtain up to 13 prices, one for each of these booking days.[15] The main reason to do so was to address the shortcoming common in other studies that departure times and how far in advance the ticket is purchased are not included in the available data on prices (see Peters

[13] The fares of the traditional companies were collected from the website www.opodo.co.uk, which is owned and managed by British Airways, Air France, Alitalia, Iberia, KLM, Lufthansa, Aer Lingus, Austrian Airlines, Finnair and the global distribution system Amadeus. Thus, fares listed on Opodo represent the official prices of each airline; although Opodo may not report promotional offers that an airline may post on its own website.

[14] Notably, this is a key difference with the US studies using the Databank of the US Department of Transportation's Origin and Destination Survey, which is a 10 per cent yearly random sample of all tickets that originate in the United States on US carriers (Borenstein 1990; Borenstein and Rose 1994, 2007; Evans and Kessides 1993, 1994; Kim and Singal 1993; Lederman 2008; *inter alia*). Such data are not available in Europe.

[15] For instance, if we consider London Stansted-Bergerac as the route of interest, and assume the query for the flights operated by a given airline was carried out on March 1, 2004, the spider would retrieve the prices for both the London Stansted-Bergerac and the Bergerac-London Stansted routes for departures on 3/2/2004, 3/5/2004, 3/8/2004, 3/11/2004, and so on. The return would be on 3/8/2004, 3/11/2004, etc.

2006, p.629).[16] However, given the website characteristics of Opodo, only fares for up to 8 booking days per daily flight were available.

The daily fares dataset spans a 37-month period running from June 2002 to June 2005. The countries whose routes were directly affected by the takeovers were France, Italy, Germany, Netherlands, Portugal, Spain, the Czech Republic and the UK.

For consistency, collection of the airfares took place at the same time every day. The queries for the LCA were bi-directional, with each leg priced independently. The return flight was scheduled one week after the departure. When a LCA operated more than one pair of flights per day, the fares for every flight pairs were collected.

Posted fares for FSAs were for a round trip and were halved to determine the single leg price. They belonged to the cheapest available fare class and were chosen to facilitate comparison with the fares by LCAs; specifically, like those of the LCA, the quoted prices were for non-changeable and non-refundable tickets.[17]

Due to the web sites content, we collected fares before tax and handling fees for the case of LCAs, but inclusive of them for the FSAs. Even so, this is not too much of a shortcoming in our context since, as discussed below, the analysis focuses on the changes made by each airline on the fares posted in the same months of two consecutive years. Thus, differencing would generally cancel out the taxes and fees included in the FSAs' fares as long as these have not deviated too much year on year. However, we are aware that this would not capture any upward changes in fixed charges that the LCAs may have introduced during the period.[18] Having examined the different taxes and fixed charges levied over the period study, we estimate that any bias between LCA and FSA fares would likely be less than £4.[19] Also,

[16] We also control for departure times; see below.

[17] Towards the end of our sample period, Ryanair and EasyJet introduced the possibility to change a ticket, subject to a fixed penalty and the payment of any fare difference. This new strategy, though, does not impinge on the analysis of the takeovers' effects.

[18] Specifically, fixed charges introduce a wedge between the price posted by the LCAs (which we collected) and the actual price paid by the consumers. Failing to take account of increased LCA charges would under estimate, relative to the FSA's fares, the possible increases the LCAs may have introduced, or equivalently over estimate any reduction in their fares.

[19] The spider could not track the evolution of the LCAs' levels of fixed charges, but it is instructive to look at what type of taxes and charges were imposed upon the travelers, as these did not change over the sample period. The Government tax and the Airport tax are exogenously determined by such institutions and can only contribute to the LCAs' revenues in the case of no-shows. There is a charge if a traveler applies for a refund of such taxes. Also, Opodo tickets were non-refundable. Accordingly, any bias is likely to be a direct function of the level set by the airlines for the following two charges: the Aviation Insurance Levy, a post 9/11 surcharge to cover for the extra insurance costs due to acts of terrorism; and the Wheelchair Levy, which amounts to £0.33 and is only imposed by Ryanair. Noting that the former has been generally applied by airlines worldwide (e.g., the level set by Ryanair in September 2007 was £3.47), the bias when we compare LCAs and FSAs should not exceed the £3.80 for Ryanair, and a similar level for EasyJet.

the amount would be negligible in the price comparisons of the acquiring and target airlines (given that any fixed charges, while possibly different across the two types of firms, would be part of the final price paid by their customers).[20]

Secondary data on the traffic for all the routes and all the airlines flying to the countries indicated above was obtained from the UK Civil Aviation Authority (henceforth, "CAA") (see www.caa.co.uk). For each combination of company, route, flight code and departure period (i.e., month/year), the CAA provided traffic statistics such as the number of monthly seats, the number of monthly passengers and the monthly load factors, which were used to derive market structure variables.

5. Descriptive Analysis of the Mergers

To provide an overview of the impact on fares resulting from each takeover, the acquired routes are contrasted against a "comparison group" of routes, which includes all the routes that fall into the same city-pairs of the taken-over routes. For instance, one possible comparison route for the taken-over route "London Stansted - Naples" would be "London Gatwick - Naples". The comparison group comprises both other LCAs and the FSAs operating these routes.

The analysis also identifies short-run and longer-term effects of the takeovers by distinguishing between a "Pre-Post Period" and a "2 Years Post Period". The former comprises a sub-period with the months for which we have fare data posted by the acquired carriers (June 2002 to March 2003 for Buzz, and June 2002 to December 2002 for Go Fly) and another sub-period with the same months one year later, after each takeover had been completed. The "2 Years Post Period" tracks the behavior of the acquiring companies in two post-takeovers sub-periods, each identified respectively by the first and the second year of operation in the acquired routes (respectively, May 2003 to April 2004 and May 2004 to May 2005 for Ryanair, and January 2003 to December 2003 and January 2004 to December 2004 for EasyJet). Focarelli and Panetta (2003) argue that a short post-merger period might fail to account for a merger's long run efficiency gains due to the harmonization of the organizational practices between the two merging firms. Considering that Ryanair needed just a month to retrain Buzz's retained workforce, and that EasyJet presumably did the same without stopping the services it took over from Go Fly, a 25-month post-merger period is likely to be more than sufficient to capture each merger's full effect on fares.

[20] Other charges were introduced after our sample period. For example, Ryanair was the first to introduce the charges for checked-in luggage on March 13, 2006. Finally, the credit card charges have always been of similar magnitude across all the LCAs as well as Opodo, and thus do not have any differential role.

Indeed, previous studies in the airline industry have considered even shorter periods. In evaluating the impact of the Northwest/Republic and TWA/Ozark mergers in the US, Borenstein (1990) looks at the fares one year after the mergers took place, while Kim and Singal (1993) analyze the price changes one quarter after the two mergers' completion.[21]

5.1 Impact of takeovers on average fares across booking days

For each route type and booking days before flight departure, Figures 1 and 2 plot the difference between the mean fares in the second and first sub-period of each period, which are in turn reported in Table 1.

–Table 1 and Figures 1 and 2 near here –

Taking first the Buzz/Ryanair takeover and its "Pre-Post Period", the descriptive evidence points to the following aspects. First, relative to Buzz, Ryanair appears to have cut all fares with the exception of the fare for the day immediately before departure. Second, Ryanair's prices in the "2 Years Post Period" remained highly stable on the acquired routes across booking days. Third, increases in the comparison group appear to be of small magnitude and restricted to very late booking days, although we also observe decreases of similar sizes for early booking fares in the "2 Years Post Period".

– Figure 3 near here –

This characterization for the Buzz/Ryanair case also appears consistent with the evidence in Figure 3, which uses all the fares available for each airline. Compared with Buzz, Ryanair operates with a much steeper price profile for the days immediately preceding a flight's departure. Taking the evidence in Figure 1, we can surmise that Ryanair introduced its own specific yield management system to fare setting in the routes it took over, which was substantially different from the one Buzz adopted, and that this system was consistently followed in the two years after the takeover. These issues are further investigated below.

Similar findings appear to apply to the Go Fly/EasyJet takeover. All of EasyJet's fares turn out to be lower on average than the ones posted by Go Fly a year earlier and lower than those in the comparison group (Table 1). Yet, in the "2 Years Post Period", EasyJet raised its late booking fares (i.e. for the 1, 4, 7,

[21] A notable exception is the study by Morrison (1996), which examines the impact of US airline mergers eight to nine years after they occurred. However, he acknowledges that with such lengths of time determining whether subsequent directions of prices were directly due to the mergers or other market developments (e.g., entry/exit patterns, changes in consumer demand, or cost conditions) is highly problematic.

10 and 14 booking days) on these acquired routes (Figure 2), which in some cases were higher than in the comparison group (Table 1). Such increases are however of limited magnitude (about £10 or less) and well below the decreases observed in the first period. Similar to Ryanair, EasyJet maintained its lower early booking fares, although the fares for the latest booking days became higher than those in the comparison group. Importantly, the fares in the comparison group show very limited increases in the "Pre-Post Period" and no change at all in the two years post-takeover, suggesting that the takeover had no impact on the pricing behavior of the airlines operating in the comparison routes. Overall, the evidence suggests that relative to Go Fly, EasyJet offered lower prices on the acquired routes but that it partly reversed its first year's actions, by increasing its late booking fares during the second year.

5.2 A possible source of efficiency gains

There is an extensive literature relating airport presence with the likelihood of entry (e.g., Berry, 1992; Goolsbee and Syverson, 2006; Kwoka and Shumilkina, 2008). The economic rationales underlying such a relationship refer to demand- and cost-side economies, as well as to the market power effect associated with airport dominance. The latter, however, arises from marketing strategies implemented exclusively by FSAs (see Lederman, 2008), and is not specifically relevant to the context considered here.

The evolution of the acquiring firms' market shares in some of the main UK airports where they (or the target) operated before and after the takeovers is shown in Table 2. The only notable increase for Ryanair occurred at London-Stansted airport, after Buzz's operations were acquired. Given the fixed costs involved in managing operations at an airport base, it is likely that the takeover allowed Ryanair to realize cost synergies in the form of scale economies. As far as EasyJet is concerned, acquiring Go Fly was likely to be cost-effective for at least two reasons. First, it allowed immediate entry (and a sufficiently high market share) in such airports as Bristol, Newcastle and London Stansted, where EasyJet was totally absent. Second, it enhanced (sometimes significantly as in the case of East Midlands and Belfast Intl. airports) EasyJet's market shares in those airports where it was already operating. Both reasons are associated with the realization of scale economies.

The hypothesis that the takeovers have enhanced the cost advantage enjoyed by the acquiring firms at their airport bases appears to be supported by the intense entry activity registered by the acquiring firms in those airports where the impact of the takeovers on their airport market shares was largest. Indeed, Ryanair started 21 new routes departing from London Stansted in the 25 months after the takeover. More importantly, EasyJet's entry activity was particularly noticeable in those airports where it did not operate prior to the takeover, as well as in some of its existing bases. It is noteworthy that such

new routes often involved another end-point where the two companies had already set up their operations, thereby allowing for demand-side economies through service scheduling and an increased number of travel options for customers at both endpoints.

– Table 2 near here –

5.3 Inter-temporal pricing profile

The above discussion has highlighted that the acquiring firms lowered the posted prices for most booking days but at some point increased their late booking fares on the acquired routes. To provide some further insight on this latter aspect, it may be informative to take a detailed look at fares on a sample route affected by each takeover.

As an illustration, Figure 4 compares two late and two early booking days on the Stansted-Bergerac route operated by Buzz (until March 2003) and then by Ryanair (from May 2003), showing the mean weekly fares for the 1, 4, 49 and 56 booking days, normalized by the fares posted 10 days prior to departure. The pre-takeover period clearly shows a smaller dispersion of fares across all four of these booking days. Indeed, in the pre-takeover period all the ratios alternate around the value of 1 (i.e., fares for different booking days are not very different from the fares available 10 days before departure), but in the post-takeover period the late booking fares for 1 and 4 days prior to departure are generally two to three times larger than the base price. However, the early booking fares continue to fluctuate around the pre-takeover values. This suggests that Ryanair, unlike Buzz, is committed to a pricing policy characterized by large price hikes a few days prior to departure. It is also noteworthy that the lowest dispersion in Figure 4 is observed August each year, when all the fares for all the booking days tend to have more similar high levels (presumably because the yield management model takes account of the high anticipated demand in that particular month).

– Figure 4 near here –

A similar increase in the price dispersion in the post-takeover period was found in the Go Fly/EasyJet takeover.[22] For both takeovers, the data point out a clear tendency for both acquiring firms to raise late booking fares. This is consistent with an attempt to pursue a more intense inter-temporal price discrimination strategy aimed at extracting more surplus from the consumers that have a low price elasticity, presumably those that indeed book a flight late, while offering lower fares to early bookers that are more price sensitive and have more elastic demand.[23]

[22] Details are available from the authors on request.
[23] For instance, see Gale and Holmes (1992; 1993) and Dana (1998; 1999), as discussed further in Section 7.2.

5.4 Other effects

Apart from prices, consumer welfare will be affected by other variables, notably the frequency, capacity and choice of flights as well as choice through competing airlines, all of which can be indicative of effective competition prevailing post-merger. Table 3 provides some summary statistics on these aspects pertaining to the routes and the markets directly affected by the takeovers.

– Table 3 near here –

For each takeover, Table 3 reports statistics "Pre-Post Period" and the "2 Years Post Period". These figures provide a direct measure of the changes brought about by the acquiring companies and enable a first assessment of the non-price effects of the two takeovers. On its acquired routes, Ryanair increased the mean number of flights in a route by about 22%, from 63 to 77. This is reflected in the increase from 5,282 to 9,504 in the mean monthly number of passengers. This implies an increase in the average number of passengers per flight from 84 to 123. In contrast, EasyJet slightly reduced the flight frequency that Go Fly had scheduled on its routes, and managed to maintain very similar passengers' load factors, in the immediate post-takeover period.

Comparing the same variables over the two-year period following the takeovers shows a steady increase in flight frequency, passenger numbers and load factors for the case of Ryanair and a generally stable situation for EasyJet. The remaining variables in Table 3 indicate that the competitive scenarios in the two takeovers were quite similar, but with Buzz/Ryanair operating in slightly more concentrated routes and smaller city-pairs. However, the relevant measures of market structures pertaining to the acquired routes tended to remain largely stable, in particular in the two years following the acquisitions.

5.5 Comparison Groups

Analysis of the routes used as a comparison group revealed that the mean values for the variables in Table 3 remained largely stable over time. However, it is important to note that the companies in the comparison groups (since they include FSAs) tend to be larger, operate more frequent services and fly more passengers than the companies involved in both takeovers. Moreover, the comparison routes tend also to be less concentrated. These characteristics suggest that the ability to raise fares should be reduced for the companies in such groups, as they face more competition and may have to keep fares low in order to achieve profitable load factors for a larger number of flights. This partly contrasts with the evidence in Table 1, showing a growing trend for fares in the comparison groups.[24]

[24] Full details are available on request.

6. Econometric Assessment of Pricing Effects

To evaluate in a more formal manner how fares changed in the acquired routes, we consider the takeover as a treatment that the routes received, and compare the fares in such a treated group with those from a comparison group of routes that did not receive the treatment.[25] As previously mentioned, the routes forming the comparison groups are those sharing the same city-pair with the treated routes. Formally, we use propensity score matching methods and a Differences-in-Differences (henceforth, "DID") approach to study whether the takeovers resulted in lower or higher fares for passengers. Both methodologies enable us to control for route specific factors that could not be taken into account in the above descriptive analysis. Furthermore, given the significance of inter-temporal pricing in the airline industry, a novel aspect of our approach is to distinguish between fares according to their booking days.

6.1 Propensity Score Matching

Let $A_r \in \{0,1\}$ be an indicator of whether route r is taken over, and denote ΔP_{rc}^1 as the observed year-to-year difference in the log of the monthly mean (or median) fares on route r for flights with characteristics c in either the "Pre-Post Period" (in which case ΔP_{rc}^1 captures the percentage change in the fares posted by the acquiring firms relative to the target) or the "2 Years Post Period" (so that the change is between the fares posted by the acquiring firms over a twelve months period). Following the micro-econometric evaluation approach (e.g., Cameron and Trivedi 2005), the average effect, conditioned by booking day b, of a takeover on the fares in the acquired routes can be defined as:

$$\Delta P_\tau = E\left\{\Delta P_{rc}^1 \mid A_r = 1, b = \tau\right\} - E\left\{\Delta P_{rc}^0 \mid A_r = 1, b = \tau\right\}, \qquad (1)$$

where ΔP_{rc}^0 denotes the year-to-year percentage difference in the monthly mean (or median) fares on route r, *had route r not been taken over*. That is, the actual price effect of the takeover corresponds to what we actually observe in terms of price changes minus the change that we would have observed in the absence of the takeover. However, no individual route can be observed as both having, and not having, received the treatment and therefore ΔP_{rc}^0 is unobservable.

To confront this missing data problem, matching techniques employ a counterfactual based on the selection of a valid comparison group from the data. The purpose of matching is to pair, for a given booking day, each acquired route with a counterfactual made up of a route that has not undergone any ownership change but that shares similar characteristics with the acquired routes. As discussed above, the comparison group includes all the routes that belong to the same city-pair of the acquired routes. Thus,

[25] This is a common approach to examining pricing effects of mergers. For recent surveys, see Ashenfelter and Hosken (2008) and Weinberg (2008).

the treated and the comparison group automatically share similar structural characteristics (e.g., route length), as well as some unobserved idiosyncratic shocks that may have occurred at the city-pair level.

Matching involves comparing acquired and non-acquired routes across a multidimensional set of observable characteristics. There is thus a need to derive a one-dimensional measure of "closeness" to use to pair an observation in the treated group with one (or more) in the comparison group (the counterfactuals). The "propensity score" proposed by Rosenbaum and Rubin (1983) identifies such a measure, which provides a matching index encompassing the information for route and city-pair characteristics. The propensity score is calculated from the covariates listed in Table 4 and is used within the nearest-neighbor matching algorithm to identify two counterfactual matches for each ΔP^1_{rc}.[26] The analysis is carried out independently for each booking day. To further improve the reliability of our counterfactual, exact matching is imposed for the following characteristics *c*: 'Period' (i.e., observations from the same month and year), 'Direction' (indicating whether the flight goes from the UK to Continental Europe or vice versa); 'Week-End' (if the flight departs during the week days Friday to Monday); 'Time of Departure' (a three values discrete variable identifying flights that depart before 7.30am, between 7.30am and 7.30pm, and after 7.30pm). Because we consider fare changes over a twelve-month period, the inclusion of the latter characteristic appears crucial, as it prevents the possibility of mistakenly comparing fares for an early morning flight with fares a year later for a late evening flight. Furthermore, to base our analysis on reliable monthly statistics, the mean and the median fares were not calculated unless, for each month and each company, the group *rc* included at least 7 observations for prices in each booking day. That is, a treated observation has exactly the same value for these characteristics as the paired observations from the comparison group.

– Table 4 near here –

6.1 Differences-in-Differences (DID) estimator

Following Cameron and Trivedi (2005), the DID estimator can be shown to be equivalent to the estimate of α_b in the OLS hedonic pricing regression on a sample including only observations for the same booking day:

$$P_{ribm} = X'_{rm}\beta_b + \delta_b DP + \gamma_b D_A + \alpha_b DP \cdot D_A + u_i \qquad (2)$$

[26] More formally, let P_A and P_C denote the propensity score in an acquired and non-acquired route, respectively. Conditional on obtaining an exact matching for the chosen characteristics, the set of *n* counterfactual matches satisfy $M_A(P) = \{C \mid \min_C \|P_A - P_C\|\}$. We set *n=2* to minimize the risk of spurious associations.

where P_{ribm} denotes company *i*'s monthly mean (median) fare posted *b* days before a flight's departure for flights in route *r* departing in month *m*; X'_{rm} includes a constant, the flight's characteristics 'Direction', 'Week-End' and 'Time of Departure', plus the last three variables in Table 4; *DP* equals one in the post-takeover period; D_A equals one in the acquired routes.

Given the differing characteristics of the markets involved in the two takeovers (see above), regression (2) is run separately for each takeover. Furthermore, given the strong seasonality exhibited by airline fares, the "Pre-Post Period" and the "2 Years Post Period" are also studied in separate regressions.

Finally, bearing in mind that data are from posted fares, in the application of both the Propensity Score and the DID methodology it is essential to control for the variations in fares induced by the change in the capacity offered by an airline on a route. Indeed, the decision by the acquiring firm to, say, double the number of flights in a route is also likely to have obvious repercussions on its fare setting decisions. Therefore, in applying equations (1) and (2), we only considered those routes where the yearly percentage change in the total number of flights operated by an airline remained below or equaled 25%.[27] Given the high correlation between number of flights and number of passengers, imposing such a threshold reinforces the results obtained using posted fares. Assuming that monthly demand conditions remain sufficiently stable year on year, controlling for an airline capacity in a route implies that a change in the composition and the level of fares can only be ascribed to a variation in the pricing schemes over a twelve-month period. Such a variation may be a direct consequence of the takeovers, when we compare the fares of the target and the acquiring firms; or of their longer term effects, when we consider the fares posted by the acquiring firms in the 25 months following the takeovers.

7. Evaluation of Pricing Effects

7.1 Econometric Results

Tables 5 and 6 reports the average effect of the takeover on the sample of treated routes for both mean and median yearly fare changes. Following Borenstein (1990) and Kim and Singal (1993), these Tables include, in round brackets, the same estimates weighted by the number of monthly passengers flown by an airline on a route. They also contrast possible differences in the effects observed during the consolidation phase and in the longer term.

[27] The use of the percentage change in the total number of passengers flown by an airline in the same months of two subsequent years yields similar results. Indeed, the percentage changes in the number of flights and passengers are highly correlated.

– Tables 5 & 6 near here –

With regard to Ryanair's "Pre-Post Period" (shown in the first half of Table 5), the previous comments relating to Table 1 appear to be supported in respect of the takeover's impact. Indeed, the percentage change in fares posted one day from take-off from Buzz to Ryanair was between 28%-34.6% larger than in the comparison group, while weighted mean fares changes for bookings between 28 and 70 days were 43%-67% smaller. The effect is even stronger, for both increases and decreases, on median fares. Interestingly, the marked increase in late booking fares observed in the "Pre-Post Period" is only partly reabsorbed in the two years after the takeover (see second half of Table 5), with Ryanair's weighted '1 Day' fares changing similarly to the comparison group, but with '4 Days' fares decreasing in relative terms by 14%-20%. More generally, the long run effects suggest a relatively smaller decrease in all fares, with the estimates for the weighted median fares generally appearing to be non-significant.

In contrast, the first half of Table 6 suggests that the takeover by EasyJet led to a direct, short-run decrease across all fares, which are particularly conspicuous for very early (56-70 Days) and late (1-10 Days) booking days. Critically, a similar pattern is revealed by the estimates for the overlap routes, although the decrease is of a smaller magnitude, indicating that EasyJet's enhanced competitive position in those routes may have led to smaller downward adjustments for fares.

In the two years following the takeover (see second half of Table 6), EasyJet's weighted median fares for late booking days in acquired routes increased, relative to the counterfactuals, by about 7%-11%, while no noticeable change is observed for all the other fares. For the overlapping routes, the increase for late booking fares is lower, while the early booking fares exhibit a tendency to fall (although by only about 5%).

Table 7 shows the DID estimates, which are largely consistent with the results in Table 5 and Table 6. In the "Pre-Post Period", Ryanair's '1 Day' unweighted median fares increased by about £17.40 as a consequence of the takeover, while prices for earlier booking fell by between £11.00 and £35.70 depending on the booking day. Also, as far as the long-term effects are concerned, we observe a co-movement of the fares in the treated and the comparison groups, because the price adjustments are smaller in magnitude and often non-significant, especially for the weighted median case. In any case, even taking into account a possible increase in fixed charges of about £4.00, the evidence obtained by applying the DID indicates that the post-merger fares exhibit a steeper temporal profile, which was maintained also in the second year of operation.

– Table 7 near here –

Across booking days, EasyJet's takeover led to average savings for passengers of about £12.00-£31.00 during the consolidation phase, while median fares all fell by about £15.00-£32.00. Again, such values are well above the possible increases in fixed charges. With regards to the longer-run effects of EasyJet's takeover, the findings suggest an increase of about £8.00-£11.00 for late booking fares which partly counteracts the fall in the first months after the takeover. For instance, observe that in the January 2003 to December 2004 period, the estimates for the late booking fares (up to '10 Days') are positive, while they are negative for early booking days. Taking into account the possible bias introduced by increases in fixed charges would not change the basic result that in the second year of EasyJet's operation, late booking fares slightly increased (after they had fallen in the first year) while early booking fares remained largely stable relative to those posted in the comparison group.

7.2 Impact on Pricing Policy and Consumer Welfare

Drawing on these results, we can make some observations in relation to the pricing strategy used by the acquiring airlines, and specifically the possible theoretical reasons behind the intensification of the temporal pricing profile induced by the takeovers, and the impact on consumer welfare arising from the two takeovers.

On pricing strategy, the theoretical literature on inter-temporal price discrimination suggests various reasons why airlines might offer lower-priced seats to earlier purchasers. For instance, Gale and Holmes (1993) study the adoption of Advance-Purchase Discounts ("APD") in monopolistic markets when off-peak flights can be identified with certainty. They show that setting a low fare for the off-peak flight at an early, but not a late, stage induces travelers to self-select according to their preference for a peak or an off-peak flight. With demand uncertainty, Gale and Holmes (1992) show that APD can promote efficiency by spreading consumers evenly across flights before timing of the peak period is known. The implication is that, ex-post, both the peak and the off-peak flight will exhibit a monotonically increasing time profile.

In addition to being an efficient device the airlines use to shift demand from peak to off-peak flights, APD has been found to be an optimal pricing strategy for more general market conditions. For both competitive and imperfectly competitive markets where firms set prices before the demand for a single flight is known, Dana (1998, 1999) shows that firms may offer APD because travelers with more certain demand and weaker departure time preferences are better off buying in advance due to the presence of other consumers with higher valuations and more uncertain demand. Indeed, in Dana's

analysis the airlines commit to a rationing rule that limits the number of cheaper seats and thus reduces the incentive of consumers with more (less) certain demand to postpone (bring forward) purchase.

More certain demand and weaker preferences for the schedule convenience usually denote characteristics associated with the leisure travelers segment, to which the lower early fares posted by the LCAs seem to be mostly directed. Furthermore, the rapid expansion of travel possibilities in the European market has created a situation where leisure travelers, once they have decided to travel, may have a more elastic demand because they can substitute across a sizable number of equally attractive destinations, and choose those that are more competitively priced. In contrast, route substitutability may not matter so much for business customers, for whom traveling needs may arise quite unexpectedly and at short notice. Given their strong preference for schedule convenience, the high late booking fares appear to be meant for business customers (or the presumably rare, price insensitive leisure traveler).

The theoretical literature thus seems to provide support to Ryanair's decision to replace Buzz's flat inter-temporal pricing profile with a much steeper one. Accordingly, the most straightforward explanation for the change in prices on the acquired routes is that these simply followed the pricing formulae the acquiring firm used on its existing routes, i.e. the price changes simply reflect the acquiring firm imposing its pricing model on the acquired routes rather than exploiting any enhanced market power.

In support of this explanation, Figures 5 and 6 show the change in mean fares posted by Ryanair and EasyJet, respectively, in all the routes they operated (except the acquired ones) and in the routes in the same city-pairs of the acquired routes. For both takeovers, the pricing profiles in such routes resemble those on the acquired routes in Figures 1 and 2 where, however, fares decreased by a larger amount in the "Pre-Post Period", which is likely due to lower costs in the acquiring companies. In the two years post-takeover period, Ryanair's fares show very little change across all types of routes and across booking days, while EasyJet increased late booking fares across all types of routes (including the acquired ones seen in Figure 2). Considering that it would seem highly unlikely that the acquisition of a limited number of routes determined a widespread (and very fast) alteration in the pricing strategy followed by the acquiring firms in all the routes they were previously operating, the evidence seems to suggest the opposite direction of causation: following the takeovers, the pricing rule applied by the acquiring firms on their wider network were likely used on the acquired routes.

To obtain some further insights into how the mergers may have impacted on consumers overall, we report in Table 8 results for the outcomes from four simulated distributions of seats sold across the booking days, using the DID estimates in Table 7 to work out a measure of the possible changes in the actual mean and median ticket paid by the passengers flying with Ryanair and EasyJet. Note that these

distributions are intentionally loaded towards late purchases (e.g. Distribution 4 assumes that 50% (20%) of seats are sold within a fortnight (4 days) before departure), i.e., capturing where fare increases were recorded. Even so, the simulations indicate a significant reduction of about £20 on average per passenger flying with Ryanair on the acquired routes immediately after the takeover. In the 24 months after the takeover, mean and median simulated fares remained stable, with a slight downward adjustment. Overall, the simulated results point strongly towards consumers benefiting from lower fares on the routes directly affected by this takeover.

The short-run effects of EasyJet's acquisition are more straightforward: there were fare savings for all types of travelers. However, a less clear-cut conclusion can be reached for the longer-term effects because an increase in the set of late booking fares has to be weighed against the decrease in early booking fares. Nevertheless, notice how fare decreases are larger, and increases smaller for the weighted estimates, suggesting that larger decreases were observed when an airline transported a high number of passengers. According to Barlow (2000), EasyJet sells about one-fifth of seats within the last 5 days from take-off, while about two-fifths of its load factor is realized between 45 and 10 days from departure.[28] Marginal increases of £2 or less in the simulated fares are recorded in Table 8, but only for distributions that attach a much greater weight to late booking sales. Interestingly, the simulations based on weighted estimates continue to yield negative changes. Thus, it is very unlikely that the EasyJet's takeover determined a significant, sustainable increase in the fares paid by passengers on the acquired routes, especially considering that the simulated fares suggest that, in the "Pre-Post Period", EasyJet's passengers paid on average between £17 and £20 less than they would have paid with Go Fly.

Finally, as a further argument suggesting that both mergers may have had a beneficial effect in more general social welfare terms, notice that late booking fares are usually related to more inelastic demand. Their increase therefore has smaller total welfare effects, as it largely corresponds to a direct transfer from the consumers to the firm. Correspondingly, the lower fares for early bookers, who presumably are more price elastic, can represent a significant net increase in welfare as they afford an expansion in demand (as evidenced by the high post-merger loading factors and generally increased capacity).

[28] More generally on the pattern of typical booking profile of EasyJet ticket sales, see EasyJet's 2003 annual report and accounts (p.13) (http://www.easyjet.com/common/img/FY2003EZJAnnualReportandAcconts.pdf). This indicates that around half of tickets sold occur between 6 and 1 weeks prior to departure and around 15% occur in the final week. For further evidence detailing specific EasyJet flights, see Koenigsberg et al. (2008), which similarly points to less than 15% of EasyJet tickets sold in the last seven days before flight departure.

8. Conclusion

In this study we argue that Low Cost Airlines, which have become key players in Europe after the civil aviation industry was fully liberalized in 1997, do not constitute a homogeneous strategic group as their business models can differ markedly. A source of this difference may lie in the history of each airline. In this respect, both acquiring firms in this study operated as independent companies since their inception, pioneering in their own specific way the Southwest "no-frills" business approach in Europe; i.e., unlike both acquired firms, which were launched as subsidiaries of Full Service Airlines.

In our analysis of the two takeovers, we have focused primarily on fare structures as a critical differentiator in the firms' business models. The evidence reveals that the acquiring firms have generally kept most fares below the pre-takeover period – the exception being for the fares posted only a few days before departure. Yet, we have also looked at other aspects, beyond fares, that might have impinged on consumer welfare. Notably, a possible concern with the takeovers might have been that they would afford the acquiring firms increased market power that would have allowed them to reduce capacity and flight frequency on the acquired routes (in order to drive up prices). However, our findings show the acquiring firms either increasing or keeping the capacity and frequency of the flights operated on the acquired routes stable. Ryanair, for example, succeeded in increasing capacity and flight frequency while also raising the load factors on the acquired routes (suggesting both allocative and productive efficiency gains). Moreover, all these effects were realized within the first post-takeover year, suggesting that the takeovers led to the almost immediate assimilation of the target firms' business models in favor of those of the acquiring firms and that consumers gained as a consequence.

However, it is conceivable that the takeovers may have negatively impacted in other respects, such as on quality factors like punctuality and safety. Although these aspects are not directly analyzed in this study, anecdotal evidence seems to run contrary to such a hypothesis. First, both acquiring firms feature prominently in the 2005 and 2006 league tables of the most punctual airlines operating in the UK based on CAA official data (see www.flightontime.info/index.html). Second, safety standards continue to be directly regulated in Europe (as well as in the US), hence the airlines are left with little discretion in this matter. Furthermore, airlines also perceive the incentive to build and maintain strong safety reputations as a prerequisite to attracting any passengers (Borenstein and Rose 2007). This may actually confer a competitive advantage to both Ryanair and EasyJet, as they operate a very young (and therefore likely safer) fleet.

The analysis here thus lends support to the UK authorities' decision to allow both takeovers. On a more general level, though, the analysis suggests an approach to merger evaluation where the standard

measurement of the post-merger market structure and conduct is considered together with an assessment of how likely it is that the character and associated competitive positioning of the acquiring firm's business model will also be applied to the acquired business. Such an approach seems to have been used, at least informally, by the European Commission ("EC") in its investigation on the takeover of Aer Lingus by Ryanair.[29] Yet, in blocking the merger, the EC's concerns about the increased market power of the acquiring firm and particularly diminished choice for Irish consumers appear to have overridden the possible opposing benefits from Ryanair's business model being applied to a wider geographical market, including competing against FSAs on intercontinental routes. Nevertheless, faced with continuing international regulatory restrictions and the need for scale economies, it appears likely that takeovers will remain a critical means by which successful LCAs can extend their market reach and present a stronger competitive challenge to FSAs, duly benefiting consumers in the process. [30]

[29] For instance, EU Competition Commissioner Neelie Kroes is quoted as saying: "… Monopolies are bad for consumers because they reduce choice, lower quality and give rise to higher prices. Low-cost carriers like Ryanair are no exception to this rule" – see "Commission prohibits Ryanair's proposed takeover of Aer Lingus", European Commission press release IP/07/893, June 27, 2007. Interestingly, the Commission's definition of both airlines as "low-cost" hints at its belief that few gains would accrue to consumers if Ryanair's business model were applied to Aer Lingus's routes.

[30] For instance, the German Federal Cartel Office has allowed Air Berlin, Europe's third largest budget airline, to expand into the long-haul passenger business with the takeover of its German competitor LTU (see "Bundeskartellamt gibt Zusammenschluss Air Berlin/LTU frei", Bundeskartellamt press release, August 8, 2007). It is noteworthy that the takeover will constitute another instance of business-model experimentation, with a budget airline entering such long-haul destinations as New York and Las Vegas; a type of service traditionally operated by FSAs.

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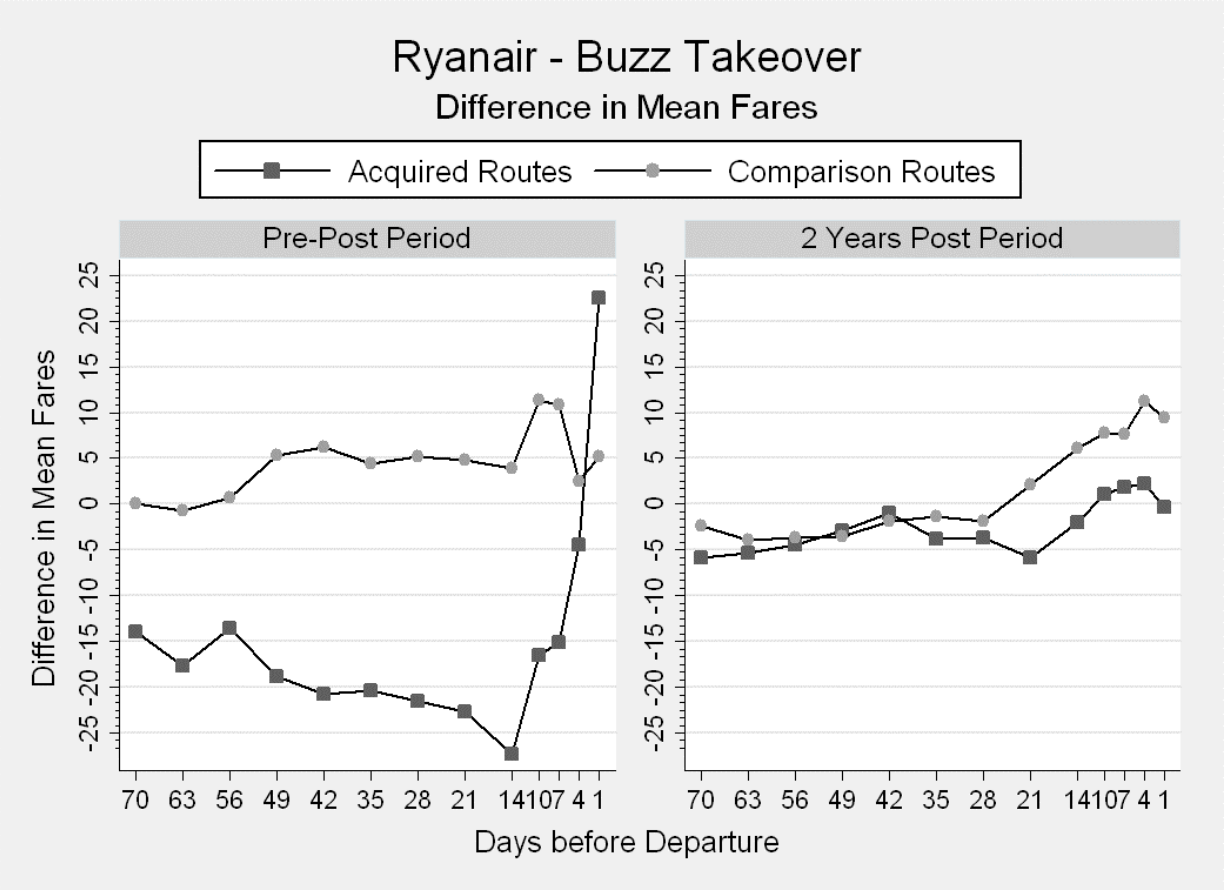
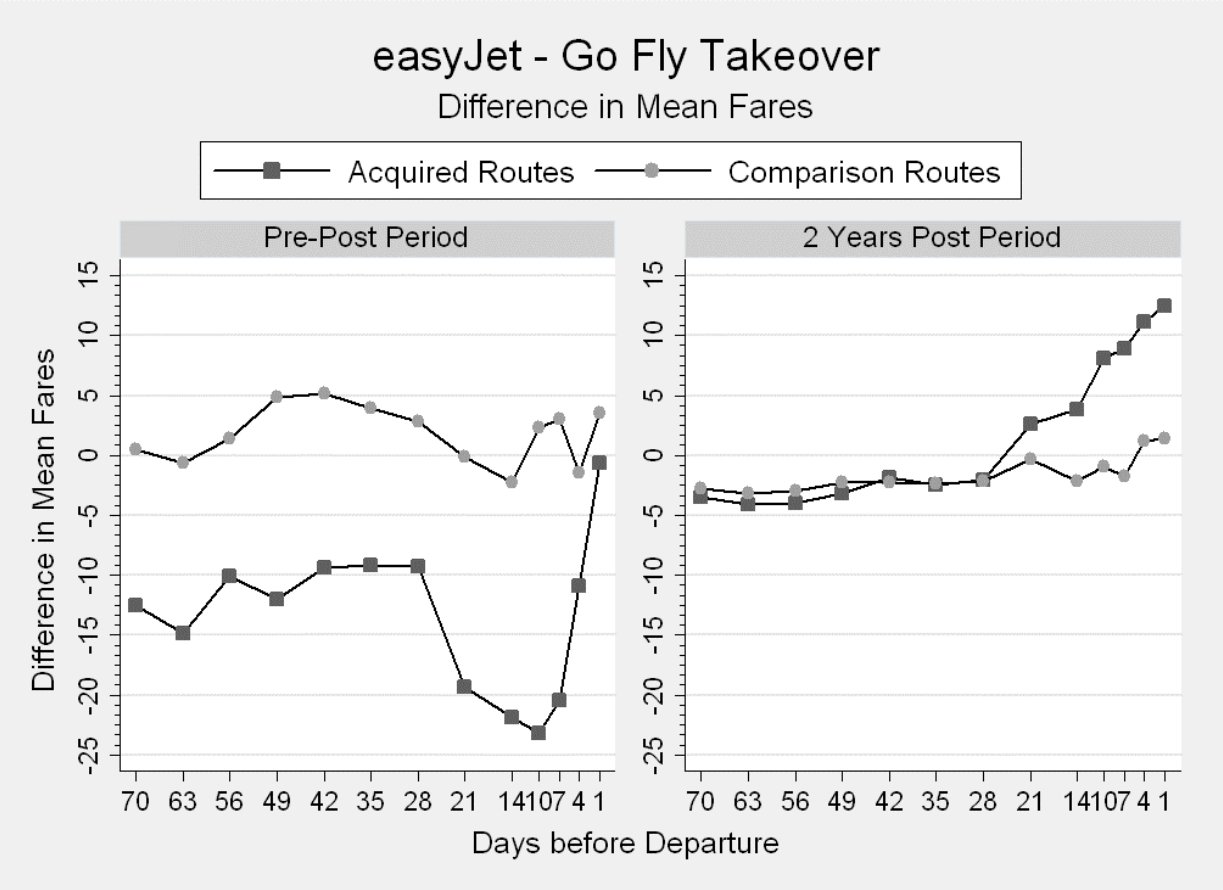
Figure 1. Ryanair/Buzz – Difference in mean monthly fares on the routes directly affected by the takeovers and on the comparison routes, by booking day and period



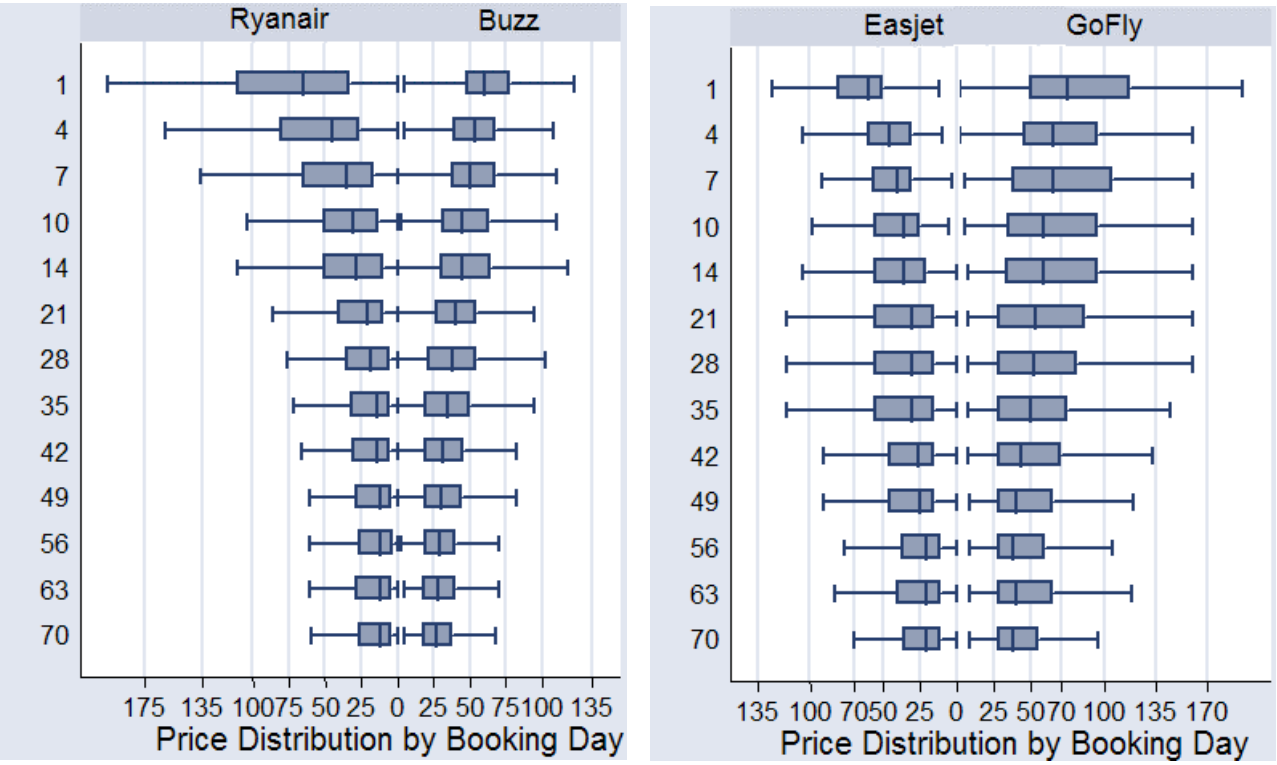
Note: The Comparison routes fall into the same city-pairs of the Acquired routes. The "Pre-Post Period" comprises the pre-takeover months June 2002 to March 2003 and the same months one year later, after the takeover was completed. The "2 Years Post Period" includes the sub-period May 2003 to April 2004 and the sub-period May 2004 to May 2005. The comparison group comprises such companies as EasyJet, Ryanair, British Airways and Iberia.

Figure 2. EasyJet/Go Fly – Difference in mean monthly fares on the routes directly affected by the takeovers and on the comparison routes, by booking day and period



Note: The Comparison routes fall into the same city-pairs of the Acquired routes. The "Pre-Post Period" comprises the pre-takeover months June 2002 to December 2002 and the same months one year later, after the takeover was completed. The "2 Years Post Period" includes the sub-period January 2003-December 2003 and the sub-period January 2004-December 2004. The comparison group comprises such companies as Bmibaby, EasyJet, Ryanair, MyTravellite, Alitalia, BMI, British Airways, Czech Airlines, Iberia and Lufthansa.

Figure 3. Comparison of the time profile of fare levels between the acquiring and the acquired company



Note: The Booking Day on the vertical axis indicates the number of days from take-off. The distribution of fares for Ryanair and EasyJet is drawn from the routes not directly affected by the takeovers. The two extremes represent the lowest and highest adjacent values, while the box reports the 25th percentile, the median and the 75th percentile values.

Figure 4. Buzz/Ryanair – Evolution of weekly fares on an acquired route (normalized by the fares posted ten days from departure)

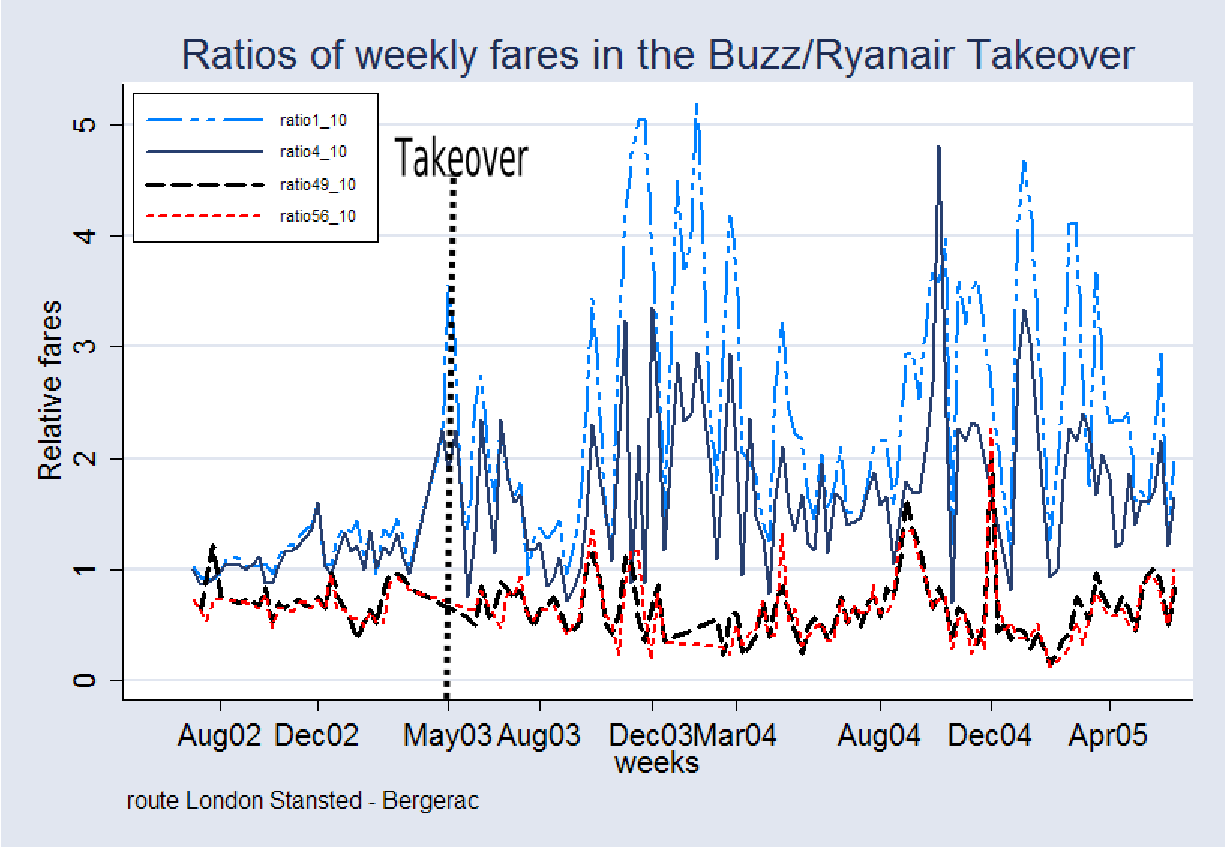
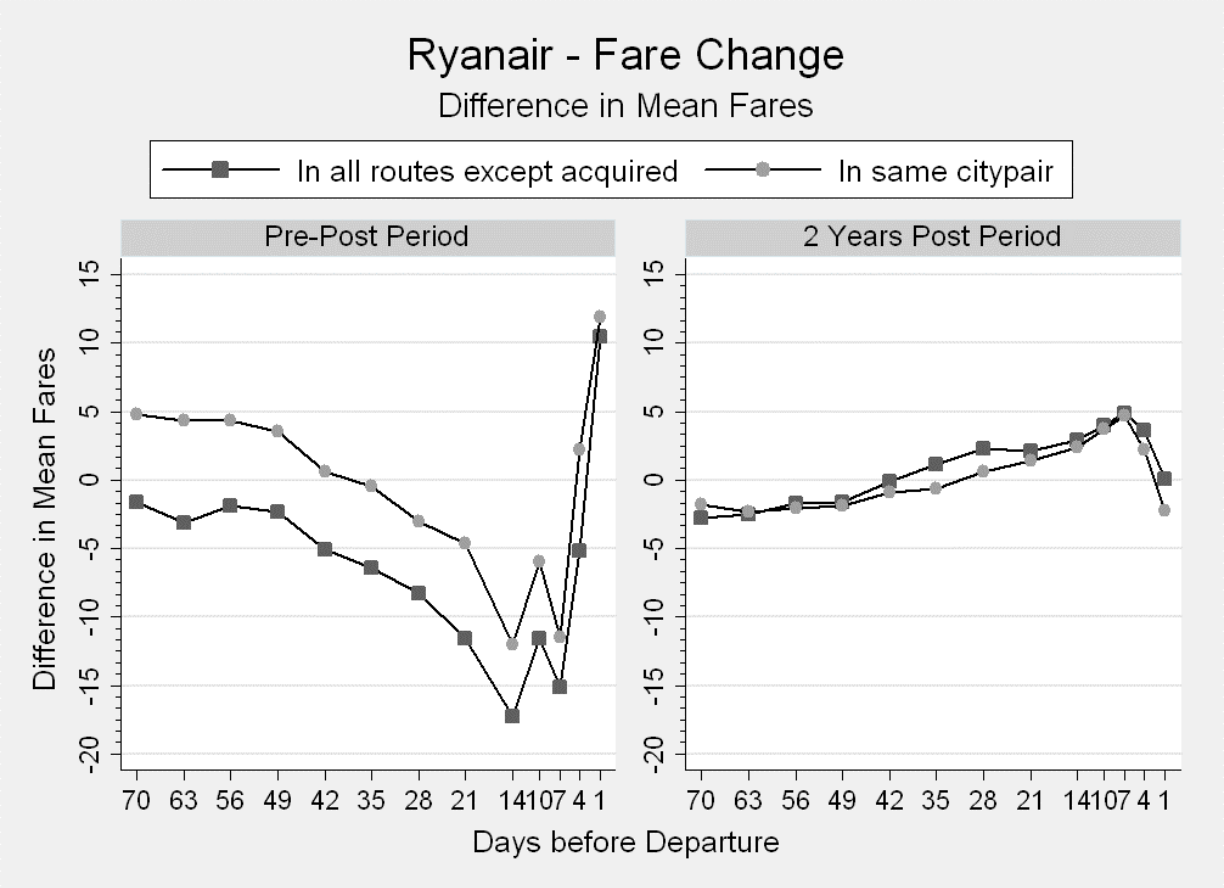
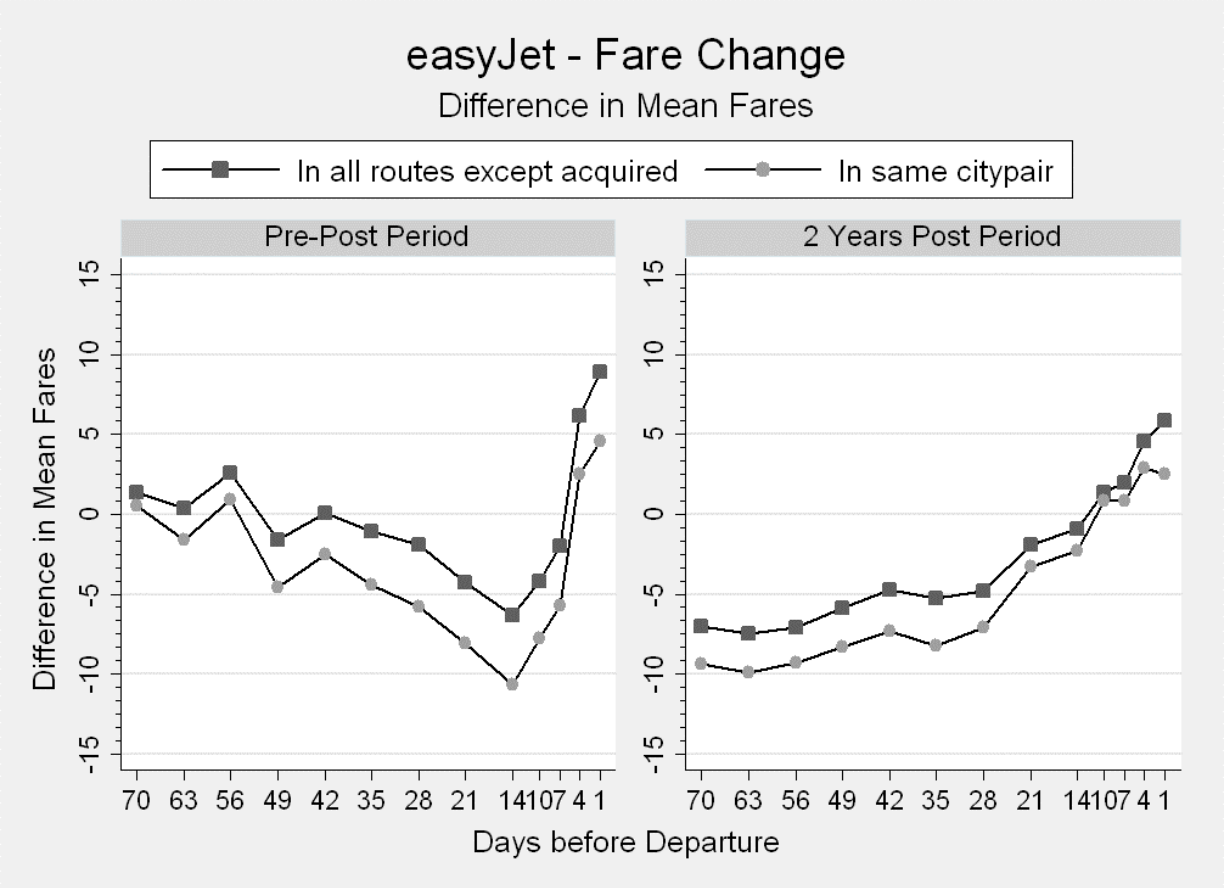


Figure 5. Ryanair – Difference in Monthly Mean Fares



Note: For a definition of each period, see text or the note in Figure 1. The "in same city-pair" sample includes routes in the same city-pair of the acquired routes.

Figure 6. EasyJet – Difference in Monthly Mean Fares



Note: For a definition of each period, see text or the note in Figure 2. The "in same city-pair" sample includes routes in the same city-pair of the acquired routes.

Table 1. Mean values of fares in the pre- and post-takeovers periods

		Buzz → Ryanair		**Ryanair → Ryanair**		**Go Fly → EasyJet**		**EasyJet → EasyJet**	
Routes type	Days	Before - Jun02/ Mar03	After - Jun03/ Mar04	1st year May03/ Apr04	2nd year May04/ May05	Before - Jun02/ Dec02	After - Jun03/ Dec03	1st year Jan03/ Dec03	2nd year Jan04/ Dec04
Comparison	1	77.8	83.0	83.8	93.2	77.6	81.1	78.9	80.3
Acquired	1	68.5	91.0	93.2	92.9	79.9	79.3	77.2	89.7
Comparison	4	58.2	60.7	62.4	73.6	60.5	59.0	59.8	61.0
Acquired	4	62.1	57.7	66.2	68.4	66.8	55.9	58.9	70.0
Comparison	7	54.4	65.3	63.9	71.5	56.9	59.9	59.0	57.2
Acquired	7	64.3	49.2	51.7	53.6	71	50.6	50.6	59.5
Comparison	10	47.6	59.0	57.6	65.3	50.8	53.1	53.1	52.2
Acquired	10	60.6	44.1	46.4	47.5	65.6	42.4	43.0	51.1
Comparison	14	51.2	55.1	55.1	61.2	52.1	49.8	50.0	47.8
Acquired	14	61.2	33.9	39.3	37.3	66.5	44.6	45.9	49.7
Comparison	21	46.2	51.0	52.4	54.5	46.0	45.9	45.5	45.2
Acquired	21	55.7	33.0	38.7	32.8	61.7	42.4	44.8	47.4
Comparison	28	46.2	51.4	54.1	52.2	43.1	45.9	44.8	42.6
Acquired	28	50.4	28.9	34.3	30.6	56.6	47.3	50.1	48.0
Comparison	35	45.3	49.7	52.5	51.2	41.5	45.4	44.0	41.6
Acquired	35	48.0	27.6	32.2	28.4	56.0	46.8	50.2	47.7
Comparison	42	40.0	46.2	50.2	48.3	37.9	43.1	42.2	39.9
Acquired	42	46.6	25.9	29.2	28.2	53.3	43.9	47.1	45.2
Comparison	49	38.5	43.8	48.7	45.1	36.7	41.5	40.8	38.5
Acquired	49	45.9	27.1	28.6	25.7	53.1	41.1	44.6	41.4
Comparison	56	33.0	33.7	37.3	33.6	32.1	33.5	33.6	30.6
Acquired	56	41.5	27.9	29.7	25.3	48.7	38.6	42.6	38.6
Comparison	63	33.2	32.5	36.4	32.5	33.6	33.0	33.3	30.1
Acquired	63	45.5	27.8	29.9	24.5	51.7	36.8	41.5	37.4
Comparison	70	31.6	31.6	34.1	31.7	31.4	31.9	32.5	29.7
Acquired	70	42.4	28.4	30.6	24.7	48.0	35.5	40.3	36.8

Note: The Comparison routes fall into the same city-pairs of the Acquired routes. The comparison group comprises such companies as Bmibaby, EasyJet, Ryanair, MyTravellite, Alitalia, BMI, British Airways, Czech Airlines, Iberia and Lufthansa.

Table 2. Evolution of acquiring firms' market shares in UK airports

UK Airports	**Ryanair**				
	March 03	June 03	June 04	June 05	Routes entered†
Bristol	0.07	0.06	0.06	0.05	1
Cardiff	0.06	0.06	0.06	0.07	-
East Midlands	0.00	0.00	0.12	0.20	5
Edinburgh	0.05	0.05	0.03	0.03	-
Glasgow-Prestwick	1.00	0.87	0.93	0.94	8
Liverpool	0.13	0.14	0.11	0.27	12
London-Gatwick	0.03	0.02	0.03	0.04	1
London-Luton	0.12	0.11	0.11	0.21	10
London-Stansted *	0.50	0.68	0.65	0.65	21
Newcastle	0.04	0.07	0.05	0.06	1
Teesside	0.18	0.18	0.11	0.19	1
UK Airports	**EasyJet**				
	Nov 02	Jan 03	June 04	June 05	Routes entered†
Belfast Intl. *	0.54	0.74	0.77	0.70	4
Bristol *	0.00	0.34	0.41	0.39	7
East Midlands *	0.03	0.25	0.24	0.26	2
Edinburgh *	0.12	0.20	0.16	0.13	-
Glasgow *	0.13	0.21	0.15	0.13	-
Newcastle *	0.00	0.07	0.32	0.33	12
Liverpool	0.75	0.72	0.74	0.48	3
London-Gatwick	0.14	0.15	0.21	0.26	15
London-Luton	0.80	0.76	0.78	0.66	8
London-Stansted *	0.00	0.24	0.24	0.22	7

Note: The shares are obtained using the number of flights to the following European countries: United Kingdom (domestic), Italy, France, Spain, Austria, Holland, Germany, Belgium, Greece, Ireland, Portugal, Switzerland, Sweden, Norway, Czech Republic. The first two columns refer to a pre- and post- takeover period, respectively. The airports denoted with an asterisk are those where Buzz and Go Fly operated before the takeover.

† Routes entered in period May 2003 to June 2005 for Ryanair, and January 2003 to June 2005 for EasyJet.

Table 3. Routes and market (city-pairs) characteristics for the routes and city-pairs involved in the takeovers

	Buzz → Ryanair		Ryanair → Ryanair		Go Fly → EasyJet		EasyJet→EasyJet	
Mean Values	Jun02-Mar03	Jun03-Mar04	May03-Apr04	May04-May05	Jun02-Dec02	Jun03-Dec03	Jan03-Dec03	Jan04-Dec04
Flights per company in route	62.8	77.3	77.5	87.9	114.3	101.3	100.5	99.7
Passengers per company in route	5282	9504	9558	13064	13875	12024	11851	12142
Mean number of passengers per flight	84.0	123.0	123.3	148.6	121.4	118.7	117.9	121.8
Route Herfindhal (flights)†	0.96	0.94	0.94	0.92	0.85	0.86	0.86	0.87
Route Herfindhal (passengers)†	0.96	0.94	0.94	0.93	0.86	0.87	0.87	0.88
Companies in route	1.08	1.13	1.13	1.15	1.31	1.30	1.30	1.30
City-pair (flights) Herfindahl†	0.83	0.83	0.83	0.78	0.46	0.42	0.43	0.41
City-pair (passenger) Herfindahl†	0.83	0.83	0.83	0.78	0.47	0.43	0.44	0.42
Relative city-pair size*	0.08	0.08	0.08	0.09	0.26	0.23	0.24	0.23
Number of routes in city-pair	1.63	1.81	1.81	2.20	3.24	3.79	3.64	3.91
Number of companies in city-pair	1.94	1.81	1.81	2.06	3.50	3.43	3.38	3.44

Source: U.K. Civil Aviation Authority.

Note: For the Buzz-Ryanair case, the routes discontinued by Ryanair were not taken into account in the calculation of the mean values in the June02-March03 period.

† Market shares calculated using either the number of monthly flights per company or the number of monthly passengers per company.

* To obtain "Relative City-pair Size" the UK, Italy, France, Germany and Spain were each divided into three sub-country regions: North, Center and South. The variable is calculated as the share of total flights in a city-pair (say, London to Rome) over the total flights connecting the sub-area in the UK with the sub-area in the country of the other city-pair endpoint (i.e., from the South of the UK to the Center of Italy as the sub-areas where London and Rome are respectively located). For smaller countries, the denominator is given by taking the whole country.

Table 4. Covariates used to calculate propensity scores

Variable	*Description*
Route Herfindahl	Herfindal Index with route's shares calculated using a company's number of flights (see Table 3)
Route Length	Expressed in miles
Number of UK airports connected to the arrival airport	The number of UK origin airports offering flights to the arrival airport.
Relative city-pair size	Size of regional market (see Table 3 for statistics)
Number of routes in city-pair	Number of routes within a city-pair (see Table 3)

Table 5. Buzz/Ryanair takeover – Nearest Neighbor Matching Estimates for percentage change in monthly mean and median fares (average treatment effect for the Treated with weighted estimates in round brackets)

	Buzz → Ryanair		**Ryanair → Ryanair**	
Starting period/ End period	Jun02-Mar03/ Jun03-Mar04/		May03-Apr04/ May04-May05	
Booking Day	Mean	Median	Mean	Median
1 Day	34.6[a]	36.3[a]	-10.5[a]	-9.2[c]
	(28.0)[a]	(28.9)[a]	(-1.8)	(-0.2)
4 Days	9.0[b]	4.5	-20.8[a]	-20.6[a]
	(2.9)	(3.5)	(-14.5)[a]	(-18.0)[a]
7 Days	-7.5[c]	-15.4[a]	-19.4[a]	-14.5[a]
	(-13.1)[a]	(-18.6)[a]	(-15.6)[a]	(-6.8)
10 Days	-11.0[b]	-29.9[a]	-17.2[a]	-10.2[b]
	(-15.0)[a]	(-29.1)[a]	(-12.7)[a]	(-4.5)
14 Days	-24.5[a]	-47.2[a]	-23.4[a]	-21.6[a]
	(-22.8)[a]	(-43.2)[a]	(-17.4)[a]	(-8.3)
21 Days	-28.9[a]	-46.4[a]	-21.1[a]	-25.2[a]
	(-23.8)[a]	(-38.4)[a]	(-15.5)[a]	(-24.8)[a]
28 Days	-43.4[a]	-59.5[a]	-8.3[b]	-7.4
	(-43.5)[a]	(-54.7)[a]	(-6.2)	(-8.7)
35 Days	-48.3[a]	-61.8[a]	-11.8[a]	-11.2[c]
	(-48.9)[a]	(-61.8)[a]	(-10.3)[c]	(-11.2)[c]
42 Days	-49.9[a]	-48.0[a]	-7.7	-6.8
	(-58.4)[a]	(-63.5)[a]	(-7.8)	(-4.9)
49 Days	-49.6[a]	-41.3[a]	-9.5[c]	-14.0[c]
	(-59.6)[a]	(-53.7)[a]	(-9.0)	(-15.2)[c]
56 Days	-50.3[a]	-37.3[a]	-12.0[b]	-20.0[a]
	(-66.7)[a]	(-51.0)[a]	(-12.7)[b]	(-18.9)[b]
63 Days	-56.2[a]	-49.3[a]	-17.6[a]	-16.2[a]
	(-65.6)[a]	(-59.8)[a]	(-14.4)[a]	(-16.0)[b]
70 Days	-54.4[a]	-45.3[a]	-6.6	-7.5
	(-67.3)[a]	(-54.2)[a]	(-9.3)[c]	(-7.5)
N	2138		5439	

Note: Propensity Score evaluated using the covariates in Table 4. Exact matching variables: 'Period', 'Direction', 'Week-End' and 'Time of Departure'. Weights: Number of company *i*'s monthly passengers on a route.

[a, b, c] denote significant at the 1%, 5% and 10% level, respectively.

Table 6. Go Fly/EasyJet takeover – Nearest Neighbor Matching Estimates for percentage change in monthly mean and median fares (average treatment effect for the Treated with weighted estimates in round brackets)

	Go Fly → EasyJet			**EasyJet → EasyJet**		
Starting period/ End period	Jun02-Dec02/ Jun03-Dec03			Jan03-Dec03/ Jan04-Dec04		
Booking Day	Mean	Median	Mean Overlap	Mean	Median	Mean Overlap
1 Day	-22.8[a]	-26.4[a]	-11.9[a]	12.7[a]	12.6[a]	5.6[a]
	(-22.3)[a]	(-28.8)[a]	(-10.2)[a]	(10.7)[a]	(10.8)[a]	(6.0)[a]
4 Days	-25.8[a]	-24.5[a]	-22.5[a]	11.8[a]	15.0[a]	3.7[c]
	(-28.6)[a]	(-31.3)[a]	(-18.4)[a]	(9.3)[a]	(11.2)[a]	(3.4)
7 Days	-22.8[a]	-15.8[a]	-25.5[a]	9.8[a]	12.8[a]	1.7
	(-22.6)[a]	(-17.8)[a]	(-24.1)[a]	(6.3)[a]	(7.0)[a]	(1.8)
10 Days	-28.2[a]	-20.2[a]	-32.4[a]	9.8[a]	11.8[a]	2.3
	(-28.8)[a]	(-23.5)[a]	(-31.8)[a]	(6.1)[a]	(6.8)[a]	(2.9)[b]
14 Days	-23.7[a]	-19.7[a]	-20.7[a]	7.0[a]	10.3[a]	0.3
	(-25.0)[a]	(-22.1)[a]	(-17.6)[a]	(3.2)[b]	(4.0)[c]	(-1.5)
21 Days	-21.7[a]	-18.2[a]	-19.5[a]	3.8[a]	3.9[c]	1.1
	(-21.1)[a]	(-19.7)[a]	(-16.7)[a]	(0.8)	(0.8)	(-0.5)
28 Days	-13.5[a]	-12.4[b]	-13.2[a]	-2.3[c]	1.6	-2.1
	(-14.5)[a]	(-16.3)[a]	(-10.3)[a]	(-4.2)[a]	(-0.5)	(-3.6)[a]
35 Days	-17.3[a]	-17.7[a]	-10.2[a]	-1.1	1.9	-1.5
	(-19.3)[a]	(-21.5)[a]	(-6.3)[c]	(-1.7)	(0.2)	(-2.2)
42 Days	-21.5[a]	-24.4[a]	-14.7[a]	1.2	3.1	-4.1[a]
	(-23.5)[a]	(-30.9)[a]	(-9.7)[a]	(1.4)	(0.1)	(-4.9)[a]
49 Days	-30.8[a]	-37.7[a]	-16.0[a]	1.8	3.3[c]	-4.7[a]
	(-29.8)[a]	(-39.4)[a]	(-8.0)[b]	(1.8)	(2.1)	(-5.0)[a]
56 Days	-33.7[a]	-42.4[a]	-27.9[a]	4.0[a]	5.2[a]	-5.0[a]
	(-34.7)[a]	(-43.3)[a]	(-23.6)[a]	(4.0)[b]	(3.8)[c]	(-5.0)[a]
63 Days	-40.1[a]	-52.0[a]	-30.4[a]	3.6[b]	4.7[b]	-4.7[a]
	(-41.1)[a]	(-56.6)[a]	(-25.3)[a]	(2.8)[c]	(-0.4)	(-4.6)[a]
70 Days	-46.6[a]	-58.0[a]	-34.2[a]	3.5[b]	4.9[b]	-4.9[a]
	(-49.6)[a]	(-66.7)[a]	(-27.9)[a]	(2.3)	(1.6)	(-4.8)[a]
N	8893		3866	39925		10772

Note: Propensity Score evaluated using the covariates in Table 4. Exact matching variables: 'Period', 'Direction', 'Week-End' and 'Time of Departure'. Overlap routes are shown in Table 1. Weights: Number of company *i*'s monthly passengers on a route.

[a, b, c] significant at the 1%, 5% and 10% level, respectively.

Table 7. Difference-in-Difference Estimates for change in fare levels (£'s) between the starting and end period (weighted estimates in round brackets)

	Buzz→Ryanair		Ryanair→Ryanair		Go Fly→EasyJet		EasyJet→EasyJet	
Starting period/ End period	Jun02-Mar03/ Jun03-Mar04/		May03-Apr04/ May04-May05		Jun02-Dec02/ Jun03-Dec03		Jan03-Dec03/ Jan04-Dec04	
Booking Day	Mean	Median	Mean	Median	Mean	Median	Mean	Median
1 Day	13.9[b]	17.4[a]	-7.2[b]	-6.2	-12.0[a]	-14.8[a]	10.6[a]	9.6[a]
	(6.6)	(10.5)[c]	(-4.6)	(-3.9)	(-18.6)[a]	(-22.7)[a]	(6.6)[a]	(6.2)[a]
4 Days	-7.4	-7.0	-6.9[b]	-7.1[b]	-15.7[a]	-17.0[a]	8.7[a]	8.0[a]
	(-12.8)[a]	(-11.3)[b]	(-5.5)[c]	(-5.9)[c]	(-18.3)[a]	(-20.9)[a]	(4.4)[a]	(3.9)[b]
7 Days	-23.1[a]	-23.5[a]	-2.9	-4.1	-26.2[a]	-27.9[a]	8.0[a]	7.3[a]
	(-32.3)[a]	(-30.6)[a]	(-1.8)	(-3.6)	(-30.7)[a]	(-32.4)[a]	(0.6)	(0.0)
10 Days	-22.4[a]	-24.0[a]	-4.0[c]	-1.9	-27.1[a]	-25.8[a]	6.3[a]	5.0[a]
	(-28.1)[a]	(-28.5)[a]	(-2.4)	(-0.9)	(-31.0)[a]	(-30.2)[a]	(-0.6)	(-1.4)
14 Days	-29.2[a]	-31.3[a]	-6.0[a]	-4.6[b]	-22.1[a]	-21.7[a]	3.1[a]	2.3[b]
	(-34.2)[a]	(-35.7)[a]	(-5.2)[b]	(-4.5)[c]	(-26.5)[a]	(-26.4)[a]	(-4.0)[a]	(-4.7)[a]
21 Days	-25.8[a]	-27.9[a]	-6.3[a]	-5.9[a]	-19.6[a]	-19.6[a]	0.2	-0.4
	(-30.2)[a]	(-30.6)[a]	(-5.3)[b]	(-5.3)[b]	(-21.9)[a]	(-22.4)[a]	(-7.2)[a]	(-7.6)[a]
28 Days	-23.4[a]	-24.3[a]	-0.1	0.6	-11.8[a]	-12.1[a]	-2.7[a]	-2.5[b]
	(-27.4)[a]	(-27.1)[a]	(0.8)	(0.9)	(-14.5)[a]	(-14.7)[a]	(-9.6)[a]	(-9.2)[a]
35 Days	-23.5[a]	-25.4[a]	-0.8	-1.1	-13.2[a]	-14.3[a]	-3.0[a]	-3.1[a]
	(-29.4)[a]	(-31.3)[a]	(0.9)	(0.1)	(-15.2)[a]	(-15.6)[a]	(-9.7)[a]	(-9.6)[a]
42 Days	-24.2[a]	-24.2[a]	2.4	1.9	-14.6[a]	-15.6[a]	-2.5[b]	-2.2[b]
	(-28.7)[a]	(-28.6)[a]	(2.9)	(2.2)	(-16.4)[a]	(-17.1)[a]	(-9.1)[a]	(-8.5)[a]
49 Days	-17.2[a]	-16.4[a]	2.3	2	-17.1[a]	-18.5[a]	-3.5[a]	-4.0[a]
	(-26.2)[a]	(-25.2)[a]	(1.3)	(0.7)	(-18.4)[a]	(-19.7)[a]	(-9.7)[a]	(-9.6)[a]
56 Days	-11.9[a]	-11.3[a]	0.4	0.2	-13.0[a]	-13.8[a]	-2.5[a]	-2.9[a]
	(-12.7)[a]	(-11.0)[b]	(2.3)	(2.0)	(-14.0)[a]	(-14.3)[a]	(-4.0)[a]	(-4.2)[a]
63 Days	-15.7[a]	-14.1[a]	-0.6	-3	-13.6[a]	-15.8[a]	-2.3[a]	-2.7[a]
	(-19.5)[a]	(-17.0)[a]	(1.3)	(-1.5)	(-17.3)[a]	(-19.7)[a]	(-3.6)[a]	(-3.7)[a]
70 Days	-13.4[a]	-12.8[a]	-3.1	-3.5[c]	-14.0[a]	-15.9[a]	-2.2[b]	-2.7[a]
	(-17.2)[a]	(-15.7)[a]	(-1.8)	(-2.4)	(-16.7)[a]	(-18.5)[a]	(-3.2)[a]	(-3.7)[a]
N	7,294		21,035		33,014		115,720	

Note: For each merger, the comparison sample includes only the routes that are part of the city-pairs where the acquired company, and then the acquirer, operated. The Difference-in-Difference estimates derive from OLS regressions including a number of regressors that are detailed in the paper. The full set of estimates is available upon request. Weights: Number of company *i*'s monthly passengers on a route.

Table 8. Simulated fare changes in mean and median fares

	Buzz→Ryanair		Ryanair→Ryanair		Go Fly→EasyJet		EasyJet→EasyJet	
Starting period/ End period	Jun02-Mar03/ Jun03-Mar04/		May03-Apr04/ May04-May05		Jun02-Dec02/ Jun03-Dec03		Jan03-Dec03/ Jan04-Dec04	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Distribution 1	-19.5	-20.0	-2.6	-2.4	-18.0	-18.7	1.5	1.0
	(-24.9)	(-24.4)	(-1.5)	(-1.8)	(-20.5)	(-21.9)	(-4.2)	(-4.5)
Distribution 2	-17.9	-18.2	-3.0	-2.8	-17.9	-18.7	2.2	1.6
	(-23.4)	(-22.8)	(-1.7)	(-2.0)	(-20.3)	(-22.2)	(-3.4)	(-3.7)
Distribution 3	-17.4	-17.6	-2.9	-2.7	-17.8	-18.7	2.1	1.6
	(-22.9)	(-22.1)	(-1.7)	(-2.0)	(-20.2)	(-22.2)	(-3.2)	(-3.5)
Distribution 4	-18.5	-18.9	-3.0	-2.8	-17.9	-18.7	2.4	1.9
	(-22.9)	(-22.1)	(-1.7)	(-2.0)	(-20.2)	(-22.2)	(-3.2)	(-3.5)

Note: The numbers are derived using the estimates from the Differences-in-Differences estimates reported in Table 7. The simulations from weighted estimations are in round brackets. The four distributions assume that, respectively: a) 32%, 30%, 34% and 23% of seats are cumulatively sold 42 days from departure; b) 58%, 52%, 52% and 50% of seats are cumulatively sold 21 days from departure; c) 42%, 48%, 48% and 50% of seats sold in the last two weeks before departure, with 15%, 18%, 18% and 20% sold in the last four days.