



On sources of market power in the airline industry: Panel data evidence from the US airports



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ABSTRACT

A firm can obtain market power through its dominant position on the product market, or via control of a key resource. In particular, it has been argued that airport dominance is a more important source of market power in the US airline industry than route dominance. We examine this contention by analyzing a seventeen-year panel of airport-level prices in the United States. We demonstrate that even though on average airport-level concentration appears to be the strongest source of market power, concentration on routes originating at an airport is the strongest predictor of price levels for the sub-set of large and medium hub airports. There is little evidence that either airport or route dominance significantly affect prices in the sub-sample of medium and small hub airports. There is also little evidence that an airport's dominant carrier exerts market power beyond the level predicted by the airport or route dominance. Our results imply that consumer welfare losses due to airline consolidation can be concentrated in smaller communities, and related to changes in airport-level concentration. We provide a simple evaluation of the possible effects of two recent and one projected mergers (Delta-Northwest, United-Continental, and American-US Airways) in light of this finding, and suggest that the former consolidation event can potentially lead to non-trivial consumer welfare losses to travelers in over 30 small communities.

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1. Introduction

This study takes a 30,000-foot view at the issue of sources of market power in the US airline industry. We take a fairly straightforward approach. Consider a passenger contemplating a trip that originates at a local airport. The question we ask is: will this passenger pay a higher price, other things equal, if his local airport is served by a few airlines, or if there is little competition on the individual markets originating at this airport? To give the reader a more concrete example of our question: will trips originating at an airport served by only two airlines that compete on each market originating from this gateway be priced higher than tickets for flights, originating at an airport served by four airlines, where each carrier is a monopolist on the respective routes it serves? Additionally, we inquire whether ticket prices will be higher if one of the carriers serving the airport has a dominant position at this gateway, meaning that it carries most of the passengers out of and into the airport. In other words, we examine the role airport dominance, airport concentration, and route concentration play in determining the prices for airline tickets originating at a particular airport.

While the commonly held view is that airfares are determined solely by the competition at the individual market level, we can suggest the following rationales for the airport-level concentration to affect average fares for trips originating at an airport, irrespective of whether the airlines compete head-to-head on individual non-stop routes originating at the airport.

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First, airlines operating hub-and-spoke networks will inevitably compete on one-stop routes that originate at the airport, flying passengers to the same destinations via different hubs. Second, airlines enjoying dominant position at an airport can influence airport decision making, including blocking further entry (Berry, 1990). Third, airlines' entry into an airport can be construed by incumbent carriers as a competitive threat, affecting fares on routes not directly served by the entrant (Goolsbee and Syverson, 2008). Finally, we can expect airlines at less concentrated airports to compete more aggressively for frequent fliers residing in the airport's catchment area. This expectation is drawn from Borenstein's (1989) original suggestion that frequent flier programs could be a source behind the observed hub premium.

While research on pricing in the US airline industry has been extensive, a simple question of the interplay of airport and route dominance has not been examined across the entire industry and over time. Most studies to date have either focused on a limited number of markets, or examined the issue of sources of market power over relatively short time periods. As a result, for instance, little is known about the sources of market power at small airports. Further, a simple question of the relationship between price and airport concentration has been overlooked in the literature, as researchers have focused on estimating market power of the dominant airline at an airport. Our study starts filling these gaps.

We have constructed a seventeen-year panel of airport-level average airfares for domestic trips originating at all US airports, using the data collected by the US Department of Transportation (DOT). We have then used a different DOT dataset to construct measures of concentration, at both the airport-level and for the routes with non-stop services originating at the airport. Applying conventional panel data-analysis techniques, and accounting for endogeneity of the key market concentration variables, we determine that, on average, airport concentration stands out as the most important driver of airport-level fares. The size of the effect is however not impressive: a 10% increase in airport-level HHI only raises the average fares by 1–1.8%. Further analysis reveals that the airport concentration–price relationship is primarily driven by small airports. Data analysis for large and medium hubs (airports that have traditionally been the focus of hub dominance premium studies) reveals route dominance as the primary source of market power: coefficient estimates suggest that a 10% increase in mean HHI for non-stop routes originating from such airports increases average airfares by around 7%. We also find sporadic evidence suggesting that increase in the market share of the largest airline in the airport may increase airfares.

Our research has implications, in particular, for analyzing effects of mergers in the airline industry. Recent debates over this important issue have focused on addressing the question of the impact of mergers on airfares via changes in the route-level competition (Brueckner et al., 2013). We show that analyzing effects of airline consolidation on airport-level concentration is also important. Specifically, our analysis shows that the Delta-Northwest merger is projected to substantially increase concentration at about three times as many airports as the Continental-United merger. The projected American-US Airways merger is projected to increase airport-level concentration in a number of otherwise not concentrated medium and large hub airports. We further demonstrate that the Delta-Northwest merger can potentially lead to about a quarter of a billion dollars per year in terms of consumer welfare losses through increased airport-level concentration at around thirty small airports. More generally, we suggest that gains and losses from airline consolidation may not be distributed evenly across the US airline industry; and in particular, losses from consolidation could be disproportionately borne by smaller communities.

The rest of the study is organized as follows. The next section reviews the relevant literature, followed by the description of the data and discussion of the analysis methodology. After this, data analysis results are presented and discussed, paying specific attention to the implications of our exercise for analysis of the airline mergers. The last section of the paper offers some concluding remarks.

2. Relevant literature

Looking at the rather extensive literature on the sources of market power in the US airline industry, two stylized facts stand out. First, low-cost carriers (LCC's), in particular Southwest Airlines, push average fares down on the routes they enter. Second, airport dominance appears to play an important role as a source of market power; perhaps more important than the route dominance. These facts reflect the focus of the empirical studies on LCC's and – to a larger extent – hub operators, which typically dominate the airports they serve. This focus is understandable, as emergence of hub-and-spoke networks and explosive growth of low-cost carriers have been the two most important innovations in the airline industry since deregulation. The path along which the literature developed has, however, led to the following important gaps, which our study intends to start filling. First, airport-concentration–price relationship has received substantially less attention than the dominant-carrier's-market-share-price correlation.¹ Second, smaller airports, which are as likely to be dominated by a single carrier, received little coverage. Third, aggregate-level studies examining the issue of sources of market power over longer time periods are scarce: a recent paper (Borenstein, 2011) offered such an analysis, focusing on airline-market-level fares, and demonstrated that the magnitude of hub premium has declined over the recent years. Finally, studies of the effects of airline mergers tend to assess average system-wide effects of the consolidation events, paying relatively little regard to potentially important differences between groups of routes or origin airports.

¹ Van Dender (2007) offered a direct evaluation of the relationship between airport-level fares and airline concentration. The study used a simultaneous equation system approach to present an analysis of determinants of airport-level prices, delays, frequency of service, and operating revenues at 55 large airports in the US. Van Dender did not find any significant relationship between airport-level concentration and prices. Compared to this study, our analysis provides a more comprehensive coverage of the US airline industry. Using a longer panel, we analyze price effects of the largest carriers' market share and the competition on routes originating at an airport.

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