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Competitive responses of an established airline to the entry of a low-cost carrier into its hub airports

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ABSTRACT

This paper investigates the competitive responses of China Eastern to the entry of Spring Airlines into its hub airports in Shanghai. The analysis takes into account of the actual and adjacent competition for both LCCs and full-service airlines (FSAs) within an airport-pair framework. The results of the econometric analysis showed that Spring put downward pressure on the average fares of China Eastern and other FSAs. But China Eastern responded more aggressively than other FSAs to Spring's competition on routes from the same and nearby airports. Having said that, the moderate price reduction of 4%–4.9% suggests that China Eastern did not perceive Spring as a serious competitor. Such limited impacts are due to restrictions imposed by the regulator onto Spring Airlines in terms of capacity control and access to major trunk routes.

1. Introduction

The rise of low-cost carriers (LCCs) in the past few decades is widely considered as one of the most important outcomes of airline deregulation and liberalization. Started in the United States (US) in the 1970s, the phenomenon of LCCs spread to Europe in the 1990s and to the Asia Pacific a decade later. These LCCs have driven down the cost of air travel and forced a fundamental restructuring of many existing full-service airlines (FSAs) (Njegovan, 2006; Papatheodorou and Lei, 2006). Intensified price competition between airlines has stimulated demand for short-haul air travel, leading to phenomenal growth of passenger traffic. According to the OAG Database, in 2014, worldwide, LCCs controlled 29% of market share by scheduled seat capacity.[1] Although LCCs have become a formidable force in many countries around the world, their presence in China is rather limited. By the end of 2015, there were only a handful of LCCs in China including Spring Airlines, West Air, Jiuyuan Airlines, China United Airlines. Together, these LCCs only controlled 9% of the domestic market, which was one of the lowest in the world. Nevertheless, since the first LCC, Spring Airlines, started operations in China in 2005, there has been considerable changes of competitive landscape in the airline industry. To date, few studies have systematically assessed the impact of LCCs in the Chinese domestic market.[2] Given China's status as the world's second largest aviation market and its explosive growth of air travel at a sustained annual passenger growth rate of 17% a year since 1978, a study into airline competition and LCCs in China is an important topic in contemporary aviation research.

This paper assesses the impacts of LCCs in the Chinese domestic market. It focuses on a less studied area: to examine competitive responses of an established carrier to the entry of a LCC into its hub airports. More specifically, the competitive responses of China Eastern Airlines to the entry of Spring Airlines into its hub airports in Shanghai is investigated, taking into account of the actual and adjacent competition for both LCCs and full-service airlines (FSAs) within an airport-pair framework. Shanghai is selected as the focus of the study not only because it is the largest and one of the most competitive aviation markets in China but also because the city has two commercial airports: Shanghai Pudong International Airport (PVG) and Shanghai Hongqiao International Airport (SHA). Both airports are considered to be the hub airports for China Eastern and are also used as the main operating bases by Spring Airlines. Hence, it provides an ideal setting to assess the competitive response of China Eastern to the entry of Spring Airlines. The remainder of this paper is structured as follows. Section 2 reviews the effects of LCCs

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[1] Calculated by the author using OAG database.

[2] A notable exception is the recent publication of Fu et al. (2015).

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on airfare. Section 3 describes the context of the study. Section 4 explains the data and the empirical models used in this study. Section 5 presents the regression results, while Section 6 summarizes the main findings and concludes the paper.

2. The effects of LCCs on airfares

The impacts of LCCs have generated considerable interests in the academic literature since the deregulation of the domestic airline market in the US in 1978. Studies of the US domestic market have consistently found that LCCs significantly lowered airfares on routes they entered. In the US, there is well known "Southwest effects" where the market that Southwest entered saw a dramatic increase in passenger volumes and a decrease in average airfare. Windle and Dresner (1995) found that the entry of Southwest onto a route decreased fares, on average, by 48% and resulted in increases in passengers of 200%. Vowles (2000) found that the presence of LCCs lowered the average fare in a market and Southwest had a greater impact than other LCCs. In Europe, it is observed that Southwest effects are replicated by LCCs such as Ryanair and easyJet. Alderighi et al. (2012) investigated the price-setting behavior of full-service airlines. Using data on published airfare of Lufthansa, British Airways, Alitalia and KLM for the main city-pairs from Italy to the rest of Europe, they found that competition with LCCs reduced both the business and leisure fares of full-service airlines.

Although there is abundant research on the impacts of LCCs on airfares, very limited studies looked into the competitive responses of an established airline to the entry of an LCC into its hub airport. One such study was conducted by the US Department of Transportation (1996) which examined Delta's responses to the entry of LCCs on routes from two of Delta's hubs, Atlanta and Salt Lake City. The study found that on the Salt Lake City routes, Delta reduced fares by 33% on the routes where it competed with Morris Air. However, Delta's fares changed only modestly on the Atlanta routes after the entry of ValuJet. The reason for Delta's less aggressive response to ValuJet's entry was probably due to ValuJet's relatively low market share on the Atlanta routes, hence it was perceived as less a serious threat to Delta.

Most previous studies on LCCs' pricing impacts generally adopted either "city-pair" approach or "airport-pair" approach. "City-pair" approach does not make any distinction between different airports in a multiple airport region; all airports in the same region are assumed to be a single origin (or destination) (Brueckner et al., 2013). However, in reality, they are always perceived differently by passengers in terms of access cost, level of services, and so on. In contrast, "airport-pair" approach considers each individual airport-pair as a distinct market. Given the fact that LCCs mainly operate out of secondary airports within large metropolitan areas, an LCC's fare impact in an airport-pair market often arises via service at "adjacent" airports (Brueckner et al., 2013). Hence, "airport-pair" approach is unable to capture the effects of "adjacent" airports. A way to fix the problem is to take competition from adjacent airports into account (Morrison, 2001; Goolsbee and Syverson, 2008). Such approach was adopted by Dresner et al. (1996), Morrison (2001) and Brueckner et al. (2013). Dresner et al. (1996) examined competitive effects from the entry of Southwest Airlines onto two routes, that is, Cleveland and Chicago, from Maltimore-Washington International Airport (BWI). The authors found that not only did prices decrease significantly on the routes Southwest entered, but fares also fell on competitive routes to Cleveland and Chicago from the other two Washington/Baltimore area airports.

Morrison (2001) further estimated the full effects of Southwest taking into account of actual, adjacent and potential competition using data from the US domestic market in 2008. The study showed that fares were reduced by 46% when Southwest served a route; fares were 15–26% lower when Southwest served an adjacent route that consumers view as a reasonable substitute for the route in question. Potential competition from Southwest was most effective when it served both endpoints of a route (but not the route itself) and least effective when it only served one airport that is near one of the airports in question.

Brueckner et al. (2013) extended Morrison's (2001) work on the fare impacts of LCCs by examining the competitive effects of both legacy carriers and LCCs. Using quarterly data from July 2007 to June 2008 in the US domestic market, the results showed that competition from legacy carriers generally had weak effects on average fares, while low-cost competition had dramatic fare impacts on the airport-pair, at adjacent airports, or as potential competition.

In summary, substantial literature found that LCCs put downward pressure on FSAs' airfares. How FSAs respond to low-cost competition depends on LCCs' competitive position (e.g. the route market share controlled by LCCs). There is some evidence indicating that price impact of low cost competition is not only reflected in the actual airport-pair market but also out of nearby airports. Nevertheless, most the research was conducted in the US domestic market. It would be interesting to see whether similar results could be replicated in emerging markets such as China when it is transforming from a regulated regime to a more liberal market.

3. The study context

The airline industry in China used to be heavily regulated: all aspects of the industry such as market entry, route entry, frequency, fare levels and aircraft purchasing were tightly controlled by the Civil Aviation Administration of China (CAAC) (Zhang and Chen, 2003). The market was partially deregulated in 2004 with the establishment of five privately owned airlines, namely, United Eagle Airlines, Okay Airways, Lucky Air, Spring Airlines and China Express Airlines. However, regulatory constrains remain and the private airlines are rarely granted the right to serve the most profitable routes (Fu et al., 2015). Having said that, the past decade saw a number of new players entering into the market. By the end of 2015, there were 32 scheduled airlines operating in China according to OAG Database, but the domestic market is still dominated by the biggest three state-controlled carriers, namely, Air China, China Southern Airlines, and China Eastern Airlines. Fig. 1 shows that, together, these three airlines controlled 51% of the domestic market in 2015. Other big players including Shenzhen Airlines, Xiamen Airlines, and Sichuan Airlines which were all state-owned, or majority owned by the state. The market share of privately owned Spring was a mere 2%.

This study examines China Eastern's responses to Spring's entry into its hub airports. China Eastern was established by the State in 1988 with its Headquarters in Shanghai and it is now one of the largest airlines in the world. According to Flight Global database, in 2015, the airline carried 93.8 million passengers with a fleet of 304 aircraft on 199 destinations in 30 countries. An overview of China Eastern is provided in Table 1. It can be seen that a turning point for the airline happened in 2010. In this year, China Eastern took over its largest local competitor, Shanghai Airline. The acquisition along with restructuring of China Eastern's senior management team has transformed the airline both financially and operationally. Prior to 2010, China Eastern barely made a profit and lost heavily in 2006 and 2008. The airline's net margin was increased to 7.1% in 2010, and then stayed at a stable range of 2.3%–5.5% between 2011 and 2014. Its passenger load factor was also jumped from 71% to 73% during the period 2006–2009 to close to 80% between 2010 and 2014, indicating an improvement of operating efficiency. The airline's passenger numbers also grew at a rate of 12% per year during 2006 and 2014.

Spring Airlines was established by Shanghai Spring

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