Transportation Research Part A 69 (2014) 124–141

Contents lists available at ScienceDirect

Transportation Research Part A

journal homepage: www.elsevier.com/locate/tra

Effect of slot trading on route-level competition: Evidence from experience in the UK

Hideki Fukui *

Ehime University, Faculty of Law and Letters, 3 Bunkyo-cho, Matsuyama, Ehime 790-8577, Japan

ARTICLE INFO

Article history:
Received 29 July 2013
Received in revised form 28 March 2014
Accepted 17 August 2014

Keywords:
Slot trading
Route-level competition
Mutual forbearance
Multimarket contact

ABSTRACT

This paper examines the effect of airport slot trading on route-level competition using data on slot trades in the UK. The estimation results suggest that the slot trades among partner carriers contributed to slightly increased competition measured in terms of the number of competitors per route, whereas the slot trades between rival carriers had a negative effect on the number of competitors at the route level. The results suggest that carriers seem to have used the slots obtained from their rivals not to compete with each other but to strengthen their dominance on their existing routes. This behavior is considered to be derived from the bilateral nature of slot trading, which facilitates mutual forbearance among competitors. To cope with the potential anticompetitive effect of mutual forbearance, it would be worthwhile to explore slot-trading schemes that make it harder for carriers to take advantage of multimarket contact as well as alternative methods of primary slot allocation.

1. Introduction

On December 12, 2012, the European Parliament adopted a new regulation on common rules for the allocation of slots that expressly allows carriers to buy, sell, and lease slots at the EU airports (Document Number: P7_TA-PROV(2012)0495). Free slot trading is expected to improve competitive rivalry between carriers and bring benefits to consumers (Brueckner, 2009; Starkie, 2008). At the same time, as the competition authorities have been concerned about, slot trading may lead to increased market concentration and power, which in turn could adversely affect competition between carriers (OFT and CAA, 2005; US DOJ, 2002; US DOT, 2011). Nevertheless, only a limited number of papers have examined the effect of slot trading on competition (Fukui, 2010, 2012; SDG, 2011; Starkie, 2008; US GAO, 1990; Xiong and Hansen, 2014). This paper examines the effects of slot trading on route-level competition at airports in the UK by using the OAG flight data and the slot trading data in the UK from 2008 to 2011. The results of regression analyses suggest that slot trades between partner carriers would enhance route-level competition, whereas slot trades between rival carriers would potentially reduce rivalry on the route level. The results also suggest that slot trades between rival carriers did not lead to the expansion of route networks of competing carriers. Rather, the carriers that obtained slots from their rivals seem to have shifted flights to their existing dominant routes to avoid direct competition with the seller or lessor of slots, though the effects of direct contacts between rival carriers that traded slots with each other are not strong enough to change their relationship.

The remaining parts are organized as follows: Section 2 explains the background of slot trading in the EU. Section 3 examines previous studies. Section 4 depicts an overview of slot trades and route-level competition in the UK. Section 5 describes

* Tel.: +81 89 927 8208.
E-mail address: fukui.hideki.mb@ehime-u.ac.jp

http://dx.doi.org/10.1016/j.tra.2014.08.012
0965-8564/

the estimation model and data. Section 6 presents the estimation results, followed by sensitivity analyses and discussions in Section 7. Section 8 concludes.

2. Background

In the single European aviation market, slots have been allocated based on the Council Regulation (EEC) No. 95/93 of 18 January 1993 on common rules for the allocation of slots at Community airports (hereafter Regulation 95/93). Under Regulation 95/93, air carriers have been allocated slots twice yearly from the slot pool by the airport coordinator on the basis of historical precedence (also known as "grandfather rights"): if a carrier used a series of slots for at least 80% of the time during the scheduling period, the carrier acquires the right to request the use of these slots in the next equivalent season (summer or winter) (Articles 8(1) and 8(2) of Regulation 95/93). After this primary allocation, 50% of the remaining slots (i.e., slots not allocated and newly created slots) in the pool would first be allocated to new entrants if requests by new entrants are less than 50% (Article 10(6) of Regulation 95/93).

The grandfather rights have been criticized for harming competition and consumer welfare as these rights allow carriers to continue to use their slots even if they are underutilized (Givoni and Rietveld, 2009). Monetized slot trading has been considered as an effective means to exert market pressure that is likely to alleviate inefficient slot utilization and lead to a rationalization of slot holdings (CAA, 2001). Although Regulation 95/93 has allowed carriers to exchange or transfer slots in certain specified circumstances, it has been silent as to monetary consideration accompanying slot exchanges or transfers until the EC expressly clarified in 2008 that it would not pursue infringement proceedings against Member States where such exchanges or transfers took place in a transparent manner (EC, 2008).

Some stakeholders have admitted that secondary slot trading appears to be useful in improving the use of airport capacity and encouraging vigorous competition among carriers. Indeed, the Airport Coordination Limited (ACL) suggested that efficiency of slot use has been improved in terms of available seat kilometers at Heathrow (ACL, 2010). The UK Department for Transport (UK DfT) also stated that secondary slot trading "improves competitive rivalry and brings benefits to consumers" and the "UK government has received no complaints about the way it [secondary trading] operates". (UK DfT, 2010) In contrast, the European Commission (EC) has been cautious about the link between slot mobility (or lack thereof) and the competitive behavior of carriers, and expressed its concern that secondary slot trading and the present rule alone could neither "solve all the issues" nor foster "a competitive environment for new and emerging competitors" (EC, 2010), which led to the proposal for changes in Regulation 95/93 to allow for the introduction of market-based mechanisms across the EU countries (EC, 2011).

To enhance fair competition and competitiveness of carriers, the EC expressly proposed to allow carriers to buy, sell, and lease slots. On December 22, 2012, the European Parliament adopted this proposal along with the establishment of "a transparent framework to allow contact between air carriers interested in transferring or exchanging slots" and the prohibition of "restrictive conditions intended to limit the possibility for the air carrier wishing to obtain the slots to enter into competition with the air carrier which transfers or exchanges the slots." (P7_TA(2012)0495, Article 13(2)) The adopted rule may serve to foster a competitive aviation market. However, the adopted rule does not require all of the slot trades to take place through an official market. This suggests that slot trades could still take place through bilateral negotiations under the adopted rule. Bilateral deals have the advantage that they do not limit carriers' willingness to trade slots as much as formal transactions in an official market place do. Unfortunately, such deals would not necessarily promote fair, open and transparent transactions in the slot market because carriers generally would not be inclined to sell or lease their slots to their rivals. Even when slot transactions between rival carriers occur through bilateral negotiations, these deals would not necessarily lead to enhanced competition because bilateral negotiations between rivals could facilitate mutual forbearance among them. Thus, the EC's concern about the "competitive environment for new and emerging competitors" would remain under the newly adopted rule on slot allocation.

3. Previous literature

In spite of the potential importance of the above concern, there are few empirical studies examining slot markets. Brief overviews of the UK's experience of secondary slot trading or slot usage or both are provided in OFT and CAA (2005), Mott MacDonald (2006), and De Wit and Burghouwt (2007). SDG (2011) provides a more detailed picture of slot trading in the EU. However, none of these government-commissioned studies conducted detailed data analysis. Although Starkie (2008) suggests potential benefits of slot concentration, the analysis of recent slot trading in the EU is not covered in his study. The study by Givoni and Rietveld (2009) seems to be the only one on slot usage that uses data of European routes. They conclude that "present ways of dealing with slot control do not lead to efficient use of congested airport capacity." Unfortunately, the effect of slot trading on route-level competition is not examined in Givoni and Rietveld (2009).

In regard to slot trading and utilization at congested airports in the United States, Borenstein (1988), Kleit and Kobayashi (1996), and Sened (1997) generally reached a similar conclusion that the slot markets have worked well and scarce airport capacities have not been underutilized. On the other hand, relatively recent empirical studies such as Fukui (2010, 2012) and Pai (2010) suggest that some slot markets have not been functioning competitively and capacities at the slot-constrained