Transportation Research Part E 104 (2017) 83–96

Contents lists available at ScienceDirect

Transportation Research Part E

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

Airline baggage fees and flight delays: A floor wax and dessert topping?

Amirhossein A. Yazdi *, Pritha Dutta, Adams B. Steven

Isenberg School of Management, University of Massachusetts-Amherst, United States

ARTICLE INFO

Article history:
Received 8 September 2016
Received in revised form 3 May 2017
Accepted 1 June 2017
Available online 14 June 2017

ABSTRACT

We examine the linkages between the implementation of baggage fees and late flights in the airline industry. We find that baggage fees policies result in improvements in on-time performance as assessed through late flights, directly through improvements in airport-side sorting and loading efficiencies, and indirectly through lower air travel demand. We further find that these relationships are contingent upon the presence of a hub airport on a route. Our findings have important managerial and public policy implications as baggage fees have often been cited as a driver of security queue, aircraft alley, and overhead bin congestions, and ultimately delayed flights. Our results suggest that these suppositions could be misplaced.

1. Introduction

This paper investigates the effects of the imposition of baggage fees (BF, hereafter) on airline on-time performance as assessed through late-flights. The unbundling of BF from the base fare, since its inception by the low-cost carrier, Spirit Airlines, in 2007, has become a popular strategy in the industry. The annual revenue from fees has increased substantially from 464 million USD in 2007, to 3.8 billion USD in 2015 (Bureau of Transportation Statistics), accounting for about 2.1 percent of total operating revenue across the industry. At present Southwest is the only carrier that does not charge any fees for first and second checked-in baggage.[1]

There is a dearth of literature on the effects of the imposition of BF by air carriers. A number of studies, however, have looked at the linkage between the imposition of fees and stock values (Barone et al., 2012), ticket prices (Henrickson and Scott, 2012; Brueckner et al., 2015), and air passenger demand (Scotti and Dresner, 2015). The literature, however, does not adequately address the linkage to operational service quality such as flight delays.

The association between charging fees for checked-in bags and delayed flights is not straightforward and consequently not known a priori. One might argue that the increase in carry-on bags in order to avoid paying the extra fees, would lead to security and boarding delays, and thus have a negative effect on flight delays. The imposition of BF, however, may lead to increase in on-time performance, or lower flight delays. Fees are in effect, an increase in the total flight fares (Brueckner et al., 2015). As a result, the imposition of fees would lead to a drop in the number of air travelers (Scotti and Dresner, 2015). This would result in fewer travelers, shorter security and boarding lines, and fewer carry-on bags to be loaded in aircraft overhead bins. Further, fewer checked-in bags means shorter airport-side processing time required for screening and loading bags onto aircrafts. Consequently, carriers may depart on-time more often in relation to "bags fly free" policies. As can be seen

* Corresponding author.
E-mail addresses: aalamdaryazd@som.umass.edu (A.A. Yazdi), pdutta@som.umass.edu (P. Dutta), asteven@isenberg.umass.edu (A.B. Steven).

[1] Southwest, however, like all other carriers charges for more than two checked bags and also for overweight bags.

http://dx.doi.org/10.1016/j.tre.2017.06.002
1366-5545/

in Fig. 1, late flights were on an increasing trend between 2003 and 2007. In 2008, there is a sharp drop in late flights; and in 2008, most airlines implemented BF policies. This coincidence anecdotally suggests that there is a positive correlation between BF and on-time performance.

On-time performance is a major parameter for evaluating operational efficiency of airlines; is directly associated with customer satisfaction; and is positively correlated with profitability (Dresner and Xu, 1995; Steven et al., 2012; Mellat-Parast et al., 2015). The potentials for the imposition of fees on checked-in bags to influence on-time performance, and the importance of the issue of delayed flights in terms of customer satisfaction and consequently financial performance, makes this topic extremely relevant and interesting for research. Literature search in this area turned up only two papers that have looked at this linkage (Scotti et al., 2016; Nicolae et al., 2016). Our paper builds on these seminal works by looking at nuances otherwise ignored by them.

Our paper makes several contributions: First, to the best of our knowledge this is the first paper that investigates the effect of BF on airfare, passenger demand, and on-time performance of carriers simultaneously. This is a significant contribution as investigating these relationships independently overlooks the interdependencies among these three factors and consequently, the overall effect of BF policies. Also ignoring these simultaneous relationships may not only result in biased findings, but also fail to highlight the nuanced effects of BF that can provide managerially useful insights. Second, our modelling approach allows us to isolate the indirect effect of BF on late flights through adjustments in air ticket prices, and demand for air travel, from the direct BF–late flight relationship. Our approach does not only allow policymakers to make better predictions as to the impact of the fees on on-time performance, but it also allows managers to see the unintended consequences of such ancillary fees on the bottom line through its impacts on airfare, demand, and late flights. Third, in trying to understand the relationship between BF and on-time performance, we identify moderators which can further provide managerial insights. Fourth, the magnitude of our dataset (a panel data spanning over 12 years from 2003 to 2014, on 12 airlines), and the level of analyses (disaggregated at route level), would add value in truly understanding how on-time performance of carriers has changed over time with respect to imposition of BF.

The rest of the paper is organized as follows: Section 2 discusses the literature on the imposition of fees in the airline industry. The literature review is followed by a hypotheses section which discusses our conceptual research questions. Section 4 discusses the research methodologies and the data used for the analysis, while Section 5 presents our findings. In Section 6, conclusions are presented, along with research and managerial implications.

2. Literature review

There is a dearth of literature linking BF to flight delays performance. However, researchers have investigated several aspects of imposing BF on checked-in bags by carriers. Barone et al. (2012) studied the reactions of the stock market to the announcement of the imposition of fees. The authors suggested that initial announcements of change in fees policy lead to negative abnormal returns for the announcing firms as well as their competitors. However, they found that a subsequent increase in price is associated with positive financial return and stock price performance.

Henrickson and Scott (2012) looked at the relationship between the imposition of BF and the total ticket prices paid by air travelers. They found that airline ticket prices have a negative relationship with BF. Hence it can be concluded that airlines substitute fees for higher fares. The authors further found that Southwest which does not charge for checked-in bags increased fares on routes where it competes with the legacy carriers after they imposed fees. According to Brueckner et al. (2015), however, the imposition of BF leads to an average airfare decrease by less than the baggage fee itself; hence, passengers checking-in baggage have to pay a higher full price. A complementary study by Scotti and Dresner (2015) suggested that charging fees causes passenger dissatisfaction leading to loss of customers. On an average route, the authors concluded that an increase in fees leads to decrease in passenger demand.

More relevant to our studies are studies of Scotti et al. (2016) and Nicolae et al. (2016). In their paper, Nicolae et al. (2016) found that after implementation of baggage fees, there was an improvement in the on-time performance of airlines measured through their departure delays. In Scotti et al. (2016), the authors studied the relationship between fees and operational performance and customer satisfaction. Their estimation results show that a fee is negatively correlated with the rate of mishandled baggage, and positively with on-time performance. These studies, however, have limitations that may affect their findings. Nicolae et al. (2016) used departure delays to measure on-time performance. However, it might be of more value to study arrival delays since it would have more impact on air passengers. Moreover, they looked at data spanning over only two years after the imposition of baggage fees. The effect of baggage policy on on-time performance may go beyond this limited time period. Scotti et al. (2016) used data aggregated at carrier level. There is, however, heterogeneity across routes in terms of the extent of competition, the composition of the air travelers, and consequently airline operations.

The scarcity of existing literature on the topic, and the inherent limitations of Scotti et al. (2016) and Nicolae et al. (2016), suggest that further studies are needed to expand our understanding of the effects of ancillary fees on operational performance. Our study, therefore, fills a gap in the literature by focusing on route level effects, and expanding the study horizon to many quarters post fees impositions. Our study also adds contexts to the fees-late flights linkage. Ours is the first study that investigates the moderating influences of the presence of low-cost carriers and hubs on the route, the concentration of the route, and the effect of leisure routes. Further, our study is the first to separate the direct effects from the indirect effects through air ticket prices and demand for air travel.