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An analysis of destination choice for opaque airline products using multidimensional binary logit models

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ABSTRACT

We investigate how customers respond to an opaque airline product offered by a European carrier. In this opaque product design, customers are randomly assigned to travel to one of approximately ten destinations; however, for a fee they may exclude one or more destinations from the choice set (or a particular package design) prior to learning which destination they will travel to. We use a multidimensional binary logit model to predict the probability that one or more alternatives will be chosen by a customer. Results show that customers are more likely to pay to exclude destinations located close to the origin airport and destinations that speak the same language as the origin airport. Length of stay, cost of living at the destination, and measures of destination attractiveness are also found to be significant predictors for some package designs. Based on these findings, we offer general recommendations for how to design opaque packages for airline customers.

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1. Introduction and motivation

Over the past 15 years, the competitive structure of the airline industry has dramatically changed due to the emergence of online travel agencies (such as Expedia, Orbitz and Travelocity) that facilitated the comparison of prices across airline competitors. This emergence also coincided with an increased market penetration of low cost carriers (LCCs). LCCs use different pricing models than those used by legacy carriers. Specifically, the majority of LCCs use one-way pricing, which results in separate price quotes for the departing and returning portions of a trip. One-way pricing effectively eliminates the ability to segment business and leisure travelers based on a Saturday night stay requirement (i.e., business travelers are less likely to have a trip that involves a Saturday night stay). Combine the use of one-way pricing with the fact that the internet has increased the transparency of prices for consumers and the result is that today, almost half of all air leisure travelers state that they purchase the lowest price they find when using online channels (Hartevelde et al., 2004).

In this environment, several airlines are beginning to explore the viability of using opaque products to stimulate leisure travelers that exhibit a high degree of travel flexibility without cannibalizing revenue from business travelers. As defined by Post (2010), “an opaque product is defined as a product in which one or more of the attributes that make up the product are hidden from the purchaser (that is, they’re not fully specified by the supplier) until after payment is made (e.g., see Gallego and Phillips, 2004; Fay, 2008).” From a historical perspective, it is important to note that the original applications of opaque airline products originated not by airlines, but by new companies such as Priceline and Hotwire. Many of the first articles in this area focused on: (1) Priceline, the first airline reverse auction site that entered the market in 1998 (e.g., see Kannan and

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