



Passengers' airport choice and airports' catchment area analysis in cross-border Upper Adriatic multi-airport region



Dejan Paliska ^{a,*}, Samo Drobne ^b, Giuseppe Borruso ^c, Massimo Gardina ^c, Daša Fabjan ^d

^a Frenkova 3, SI-6280, Ankaran, Slovenia

^b University of Ljubljana, Faculty of Civil and Geodetic Engineering, Jamova cesta 2, SI-1000, Ljubljana, Slovenia

^c Università di Trieste, Dipartimento di Scienze Economiche, Aziendali, Matematiche e Statistiche (DEAMS), Via Velerio 4/1, IT-34127, Trieste, Italy

^d University of Primorska, Faculty of Tourism Studies – Turistica, Obala 11a, SI-6320, Portorož, Slovenia

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ABSTRACT

Although much research has been performed on passengers' origin airport choice, there is little research on airports' catchment area size and even less on airports' catchment areas in cross-border regions. This paper addresses passengers' airport choice and analyzes airports' catchment area size and its homogeneity in the Upper Adriatic region. Using the results of passengers' survey at three regional airports (Ljubljana Jože Pučnik Airport (LJU), Venice Marco Polo Airport (VCE) and Trieste Pietro Savorgnan di Brazza Airport (TRS)) we have estimated the airports' catchment areas and airports market shares therein using multinomial logit (MNL) model structure. To additionally explore the passengers' airport choice behavior considering the different sensitivity across travellers to regional, demographic and airports attributes and account for preference heterogeneity in airport choice a mixed logit model was used. The results indicated that the three airports have relatively small core catchment areas and that the market share rapidly decreases with the increasing access time to airport. Partially, the results reinforced earlier findings showing that access time to airport is the most important determinant in airport choice for all segments (business/leisure and cross-border/domestic), however the sensitivity to access time is more pronounced in business and domestic group. Additionally, the results indicated pronounced loyalty to domestic airports and generally low importance of ticket prices, and show that in market conditions where all airports in the region have a low-cost carrier (LCC) the effect of LCC on airport choice is limited. Finally, the results indicated that the borders might have an influence on airport choice and that overall, in the cross-border regions the passengers' airport choice process is even more complex than in non cross-border regions.

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1. Introduction

Today, the Upper Adriatic cross-border area can be seen as a single multi-airport region. In the past, the region was socially and politically divided by strictly controlled administrative borders, which influenced both the general mobility of the population and the passengers' airport choice preferences. The loss of time and the extra customs procedures at border crossing deterred air passengers from departing from the neighboring country airport. As a result, the airports' market areas were, for the most part, spatially

asymmetric, being almost clear-cut at country borders (Paliska et al., 2015).

From the point of view of geographical, political, economic, and societal characteristics, the Upper Adriatic multi-airport region is very specific, since it extends over three countries: Italy, Slovenia, and Croatia. Bufon (2002, pp. 177) defined this region as a “unique space of contact between different cultural and political units and an unusual multicultural region on the EU periphery that can serve as a model for the rest of the EU.” A comprehensive overview of the geopolitical, cultural, social, and economic differences as well as conflicts in the Upper Adriatic after the 2nd world war, and the evolution in time to a more integrated and harmonized borderland is provided in Bufon and Minghi (2000) and Bufon (2002, 2013).

After the Slovenian declaration of independency in 1991, and even more importantly with the entrance of Slovenia into the EU in 2004 and later into the Schengen space at the end of 2007, the

* Corresponding author.

E-mail addresses: dejan.paliska1@gmail.com (D. Paliska), samo.drobne@fgg.uni-lj.si (S. Drobne), giuseppe.borruso@deams.units.it (G. Borruso), massimo.gardina@deams.units.it (M. Gardina), dasa.fabjan@fts.upr.si (D. Fabjan).

Slovenian-Italian cross-border area has become more spatially as well as socio-economically integrated, resulting in a substantial increase in cross-border movements (Bufon, 2013). At the same time, the declaration of independency of Slovenia and Croatia caused the transformation of an almost non-existent internal former Yugoslavian border in a well-controlled border, which became even more strictly controlled with the establishment of the Schengen border regime in 2007.

The political and economic changes, together with the changes in the air transportation market (mostly the growing presence of low-cost carriers (LCCs)) and the improved surface access infrastructure (highway system) have reshaped the size and homogeneity of airports' catchment areas. At the same time, with respect to the above-discussed border dynamics and the socio-cultural, ethnic, and linguistic differences, one could observe disparity in economic development and purchasing power, prices and costs differences of goods and services (e.g. petrol, food, public transport etc.) among countries, different currencies (fluctuation of prices along with exchange rates), differences in people travel propensity and poor border-crossing public transport connections, thus the size of the catchment areas of airports in the region may not depend only on generally recognized air transportation market forces and airports' accessibility. In fact, a study of cross-border interdependence at Slovene borderlands (Bufon, 2011) reveals fairly developed cross-border functional integration, "but more pronounced psychological differences in attitude between dwellers at 'internal' and 'external' border areas" (Bufon, 2011, pp. 2083). His study revealed that, although these differences are more pronounced at the Croato-Slovenian and Austro-Slovenian borders, where 17.9% and 19.5% of surveyed dwellers cited that they never visit the neighboring countries, this attitude is also observed at the Italo-Slovene border, where 7% of borderland dwellers never travel to Italy (Bufon, 2011).

This paper focuses primarily on presenting the case study of air passengers' behavior in the cross-border Upper Adriatic region. The specific aim is to describe the size and homogeneity of airports' catchment areas and passengers' airport preference in relation to specific region characteristics. In the article, we speculate that, still today, differences in geopolitical, socio-economic, and cultural characteristics influence passengers' airport choice and, in some cases, prevail over the commonly recognized key factors in explaining the choice decision. The aim is also to analyze the "true" cross-border integration from the air passenger point of view and determine how passengers take advantage of the differentiation of airport services available at the airports in the region. Where appropriate, our findings are compared with the research results of other relevant studies.

2. Literature review

Passengers' airport choice in a multi-airport region has already been deeply analyzed by many authors (Kanafani and Yuan, 1977; Augustinus and Demakopoulos, 1978; Harvey, 1987; Furuichi and Koppelman, 1994; Pels et al., 2001; Pels et al., 2003; Loo, 2008; Ishii et al., 2009; Marcucci and Gatta, 2011). Common findings of these studies include that airport access time and frequency of service are the dominant factors, although their importance varies between and within different groups of passengers (mainly business/leisure and regular/low cost groups) and under different geographical circumstances. For instance, business travelers traditionally assign access time and flight schedules more weight than they do to airfare; the opposite is true for non-business travelers in general (see Hess and Polak, 2005a; Pels et al., 2001; Pels et al., 2003; Loo, 2008; Ishii et al., 2009). However, individually, passengers weight these factors differently according to a variety of socio-

economic correlates (Hess and Polak, 2005a; Hess and Polak, 2005b). Although in some earlier studies, the findings regarding airfares are mixed, some recent studies indicated airfares as an important factor in airport choice decision, mainly for leisure travelers (Cohas et al., 1995; Dresner et al., 1996; Suzuki and Audino, 2003; Hess and Polak, 2005a; Hess and Polak, 2005b; Zhang and Xie, 2005). Considering airfare, recent studies have reported changes in the traditional behavior of business travelers, according to Dresner (2006) and Huse and Evangelho (2007); during recession, business passengers became more price sensitive, leading them to more closely resemble leisure passengers in their airport choice. Papatheodorou and Lei (2006) argue that, as a result of changes of airline business models, where it is difficult to distinguish between traditional schedule carriers and LCCs and with the acquisition of a new travel culture, a clear-cut solution in customer segmentation is difficult. Similar results are reported in Pantazis and Liefner (2006) and Mason (2000); according to them, business travelers are now similar to leisure travelers, willing to travel to more distant airports to reduce airfare costs.

A closely related topic to passengers' airport choice is the size and the homogeneity of the airport catchment area. Generally, the factors that influence airport choice also cause the temporal and spatial variations in airports' catchment area and market shares within (Lieshout, 2012). The most common reported factors are fare levels, service frequency, direct versus indirect service, ground access, and length of hauls (Innes and Doucet, 1990; Suzuki and Audino, 2003; Phillips et al., 2005; Zhang and Xie, 2005; Pantazis and Liefner, 2006; Fuellhart, 2007; Loo, 2008; Lian and Rønnevik, 2011; Lieshout, 2012). Recently, several studies also reported that LCCs significantly influence the spatial variation and homogeneity of the airport catchment area. Pantazis and Liefner (2006) found that the entry of LCCs resulted in enlarged and overlapping catchment areas and also in the more heterogeneous catchment area of the Hannover airport in Germany. Similar results are reported by Lian and Rønnevik (2011) in the study of airports' market shares in Norway. However, Blackstone et al. (2006) argue that, when all airports in the region have at least one LCC, the effect of LCCs on the allocation of passengers to airports is rather limited. In such a case, one can observe more variation in price among carriers at the single airport than that among airports, and consequently passengers will reallocate among carriers within that airport. Additionally, a few studies have found that airport catchment area considerably differs by destination. For instance, Lieshout (2012) argues that the airports' catchment areas differ considerably by destination and evolve in time according to the quality of the product offered. He concluded that airports offering high service level (direct flights at reasonable price) to certain destinations are able to attract passengers from more distant regions.

In some of the research, the influence of transport infrastructure on airport catchment area has been analyzed. Gjerdåker et al. (2008) reported that, in addition to differences in fares, the improved road infrastructure has significantly contributed to catchment area heterogeneity and higher levels of traffic leakage to the main airports in Norway. Similarly, Dobruszkes et al. (2011) pointed out that the airport connection with high-speed rail network might also cause the enlargement of the airport catchment area.

Recent studies bring to light another interesting dimension of passengers' airport choice. Different authors (Başar and Bhat, 2004; Hess and Polak, 2005a; Fuellhart, 2007; Marcucci and Gatta, 2012) argue that consumers' prior positive experiences positively influence subsequent choices of that same airport over others. Fuellhart (2007) says that this may be related to the fact that airport access time/costs, as one of the most important components of an airport choice decision, do not vary radically over short periods. Relatedly,

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