A General-Equilibrium Analysis of Airport Pricing, Capacity and Regulation

by

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Abstract:

Using a general-equilibrium model that includes consumers, airlines, and an airport with both aeronautical service and non-aeronautical service, this paper investigates the airport's decisions on its aeronautical charge and capacity, as well as the size of its non-aeronautical service. In contrast to the existing literature, we formally model an airport's non-aeronautical service by taking into account the endogenous determination of the size of the airport's non-aeronautical service. First, we characterize the results for welfare maximization, and find that the self-financing property does not hold. Apart from carriers' market power as a source for the failure of the self-financing property, we identify the presence of non-aeronautical service as a new source. We further show that the common practice of cross-subsidizing from the non-aeronautical to aeronautical services is incompatible with welfare maximization, because welfare maximization requires exact self-financing within the non-aeronautical sector. Second, we derive the results for profit maximization by a monopolistic airport, and demonstrate that the imposition of two taxes, one on the airport's aeronautical service and the other on its capacity investment, can recover the welfare-maximization results. Third, we analyze the two types of regulation, single-till and dual-till regulations, which are often used in practice, and show that dual-till regulation yields higher welfare than single-till regulation, as long as the profit from non-aeronautical service is positive. This result is in contrast to the prevailing wisdom in the literature, which in general favors single-till regulation.

Bio:

Prof. Zhang is a Full Professor in Operations and Logistics and holds Vancouver International Airport Authority Chair Professor in Air Transportation at Sauder School of Business, University of British Columbia (UBC). He served as the Chair of the Operations and Logistics Division, Sauder School of Business (2003-2005), and as the Director of UBC's Centre for Transport Studies (2003-2004). He has been the Vice President (Academic & Program) for the World Air Transport Research Society (ATRS) since 2006. Prof. Zhang is the recipient of the "Yokohama Special Prize for Outstanding Young Researcher" awarded at the 7th World Conference on Transportation Research (WCTR) in Sydney, Australia in 1995, and of the "WCTR-Society Prize", awarded to the overall best paper of the 8th WCTR in Antwerp, Belgium, in 1998. In June 2014, he won the "Best Overall Paper Prize" at the ITEA (International Transport Economics Association) Conference on Transportation Economics, Toulouse School of Economics, France.

Prof. Zhang has published over 140 refereed journal papers in the areas of transportation, logistics, industrial organization and trade policy. He has co-authored two recent books: Globalization and Strategic Alliances: The Case of the Airline Industry, 2000, Pergamon Press, Oxford; and Air Cargo in Mainland China and Hong Kong, 2004, Ashgate, London (Chinese editions published both in Hong Kong and Mainland China).

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All are welcome!