



ELSEVIER

Available online at www.sciencedirect.com

SCIENCE @ DIRECT®

Transportation Research Part E 40 (2004) 533–546

TRANSPORTATION
RESEARCH
PART E

www.elsevier.com/locate/tre

Japanese-airport benchmarking with the DEA and endogenous-weight TFP methods: testing the criticism of overinvestment in Japanese regional airports [☆]

Yuichiro Yoshida ^{a,*}, Hiroyoshi Fujimoto ^b

^a *Graduate School of International Relations, International University of Japan, 777 Anaji Shinden, Yamato-machi, Minami Uonuma-gun, Niigata-ken 949-7277, Japan*

^b *International Development Research Institute, Foundation for Advanced Studies on International Development, 1-6-17 Kudan Minami, Chiyoda-ku, Tokyo 102-0074, Japan*

Abstract

As aviation demand increased constantly along with the rapid economic growth in Japan and surrounding East Asian countries over the last several decades, Japanese government promoted airport construction since 1950s. However, the recent change in the economic background has made rise to a criticism toward the inefficient public investment, especially the transportation infrastructure. In this criticism, it has been argued that some of the small regional airports are indeed suffering the issue of overinvestment. Thus this paper attempts to verify the validity of such criticism by statistically measuring the efficiency of Japanese airports and conducting comparative analysis. For this objective, the paper employs two distinct methods namely data-envelopment analysis and endogenous-weight TFP methods. The results from these methods consistently indicates that the efficiency of regional airports in mainland Japan are lower than others, and that those airports constructed in the 1990s are relatively inefficient.

© 2004 Published by Elsevier Ltd.

Keywords: Total factor productivity; Data envelopment analysis; Airport efficiency

[☆] An earlier version of this paper was presented at the 7th Air Transport Research Society Conference and authors are grateful to the participants for valuable comments.

* Corresponding author. Tel.: +81 (25) 779 1111; fax: +81 (25) 779 4441.

E-mail address: yoshida@iuj.ac.jp (Y. Yoshida).

1. Introduction

Many airports have been constructed and expanded in Japan along with the economic development since the 1950s. These Japanese airports are divided basically into four categories: the first-category airports mainly for international airlines, the second-category airports mainly for domestic airlines, the third-category airports for regional airline transportation, and the other airports.¹ There were a total of 57 airports in 1970: 2 in the first category, 17 in the second category, 28 in the third-category, and the remaining 10 were others. In the year 2000, there were 94 airports (4, 25, 51, and 14 airports in the respective categories). This increase of airports can be partly explained by the increase of the aviation demand in Japan. However, in recent years government's policy of constructing airports has been criticized for over investment.

Since the Ministry of Land, Infrastructure, and Transport set up "airport Development Project" in 1967 and started constructing these airports in order to meet the increasing aviation demand, the number of airports, especially in the third category, has gradually increased and almost doubled. These regional airports may have been constructed not because of their high demand, but because of political reasons; owning airports is regarded as a high status for the region, and thus it is attractive for local governments and politicians to construct an airport in the region. Besides, the central government had declared a policy which is the so-called "one-prefecture-one-airport doctrine" along the line of airport Development Project. Therefore, prefectures which have no airport are given priority to construct new airports over the other plan of expanding some existing airports suffering from its binding capacity constraint. Consequently, it has been argued that some of the regional airports are not really necessary from the viewpoint of demand size. As a result, it is said that some regional airports are inefficiently used, suffering from its capacity that exceeds its demand size. At the same time, criticism of inefficiency of airports exists even against some airports in the first and second categories as well, especially toward those that are newly constructed. Kansai International airport is one of such airports; it is said to be suffering from the burden of heavy deficit, and its capacity over the demand size. Our central question in this paper is, therefore, to test the efficiency of the third-category regional airports on mainland Japan, and those which started their operation recently after the economic recession started in the 1990s.

The inefficiency underlying Japanese aviation policies is often hidden under the joint-production characteristics of the airports, which make it difficult to uniquely measure the efficiency of airports, by capturing the overall relationship of inputs and outputs. There are several different methodologies to pursue this task. Among them, this paper employs two different distance-function oriented methods, namely, the DEA method and the Endogenous-Weight TFP method. The DEA method is a standard way of dealing with multi-input–multi-output activities, and its history of application is long and vast. The application covers issues from environmental to those on public administration. There are a sizeable number of applications in the field of transportation, including the study by Ito (2002) which measured the efficiency of Japanese

¹ At present, these other airports are consisted of those operated by Japanese self defence forces (Chitose, Sapporo, Komatsu, Miho, and Tokushima), by US forces (Misawa), and by regional public organizations (Teshikutsu, Kohnan, Tajima, Hiroshima-nishi, Makurazaki, Amakusa, Oita-Kenou, and Chofu).

متن کامل مقاله

دریافت فوری ←

ISIArticles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات