



Reform and efficiency of New Zealand's airports



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ABSTRACT

The paper analyses the efficiency performance of New Zealand's airports in the context of structural reform. This study is in two parts using two separate databases. In the first part a Malmquist Data Envelopment Analysis approach is used to estimate the productivity change over the longer term of the country's three largest airports between 1991/92 and 2011/12. Partial productivity indicators are used to supplement and reinforce this analysis. In the second part, a separate database is used with Data Envelopment Analysis in a two-stage process to determine the impact of scale economies and ownership type on levels of efficiency. The first part of the study found that the efficiency and productivity of the three airports improved over the years, although this was influenced to some degree by locational factors. The second part of the study found that the larger airports were more efficient than the smaller ones, and jointly owned airports are somewhat less efficient. Productivity gains appear to enable airport expansion, rather than price reductions.

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1. Introduction

During the past three decades, the manner in which governments run state-owned enterprises in many countries has transformed. In particular, change has involved both the “corporatisation” and the “privatisation” of many businesses. Since the early 1980s, governments in over 190 countries have sold state-owned assets, raising \$2 trillion in the process (Megginson, 2010; Megginson and Netter, 2001). Governments in corporatising and privatising state-owned assets have been motivated by a number of factors, although one of the most important ones has been the growing view that reformed companies are more efficient. A range of studies have shown that privately-owned firms tend to have greater levels of efficiency, and profitability than government-owned ones (Megginson and Netter, 2001; Pollitt, 1999). With airports, there has been a trend toward privatisation, although government ownership is still common in North America, Europe, and Asia. Notable government sales of airports have occurred in countries such as the United Kingdom, Austria, Denmark, Japan, Germany, Hungary, Australia and New Zealand (Andrew and Dochia, 2006; Oum et al., 2006). In the case of the privatised airports, the evidence on their relative efficiency compared to state-owned ones is mixed.

The aviation industry plays an important role in the development of the New Zealand economy. In the year 2013, some 2.7

million tourists visited New Zealand (mostly by aeroplane), with the tourism industry generating NZ\$ 11.1 billion, or 16.1 per cent of the country's export income (Statistics New Zealand, *Tourism satellite account*). In 2014 New Zealand had 38 airports or aerodromes with scheduled air services. Of these, seven airports have international airline services and fourteen are large enough to require managed air traffic, which is conducted by the state-owned enterprise; Airways New Zealand. Those New Zealand airports with regular passenger services, and managed air traffic, have a considerable range in size. The largest is Auckland Airport, with around 156,000 aircraft movements per year and the smallest is Gisborne, with around 20,000 per annum (Airways New Zealand, *Statistics*). In addition there is a range of smaller scale airports whose air traffic is not managed by Airways New Zealand and for which no publically available data on air traffic are available. Table 1 provides some descriptive details about a range of New Zealand's airports.

As well as differing in size, New Zealand's airports have some variety in terms of ownership. They can be divided into three types. The first type consists of those like Auckland and Wellington airports, which are predominantly owned by private investors (with a smaller share owned by local councils); the second consists of those like Hawke's Bay and Hamilton, which are owned by a combination of different government authorities (none controlling); and the last consists of those like Christchurch, which are owned largely by a single local government authority (with perhaps a minority shareholder). Policy makers in New Zealand have tried to introduce

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Table 1
Airports with scheduled airline services in New Zealand, with air traffic managed by Airways New Zealand.

| Airport IATA Code | History | Airline services | Owned by | Aircraft movement 2010/11 2011/12 | Return on assets 2010/11 2011/12 |
|--|--|--------------------------|---|--|---|
| Auckland Airport AKL | Opened 1965 & operated by the Auckland Regional Authority. Funded by local and NZ government funds. Corporatised 1988. Privatised government share 1998. | Full International | Private 78% Auckland Council 22% | 156,484 155,903 | 10.2% 10.9% |
| Wellington International Airport WLG | Opened 1958. Funded by local and NZ Government funds. Corporatised 1988. Privatised government share 1998. | Limited International | 67% Infratil 33% Wellington City Council | 105,585 102,454 | 3.8% 3.5% |
| Christchurch International Airport CHC | Opened 1940. Owned and operated by local council. Corporatised 1988. | Full International | 75% Christchurch City Holdings Ltd NZ Government 25% | 121,112 108,757 | 4.0% 3.3% |
| Dunedin International Airport DUD | Opened 1962. Operated as joint venture between local council & NZ Government. Corporatised 1988. | Limited International | NZ Government 50% Dunedin City Council 50% | 29,229 25,328 | 0.6% 2.7% |
| Hamilton International Airport HLZ | Opened 1935. Owned and operated by local government authorities. Corporatised in 1989. | Limited International | Council (50%), Waipa (15.625%), Waikato (15.625%), Matamata-Piako (15.625%) and Otorohanga District Councils (3.125%). | 110,419 128,744 | 1.1% 1.5% |
| Invercargill Airport IVC | Opened 1939. Joint venture from 1958 between local council & NZ Government. Corporatised 1994. | Domestic only | NZ Government 45% Invercargill City Council 55% | 30,840 28,491 | 3.3% na |
| Gisborne Airport GIS | Opened 1940. Owned by local government authority. Since 2004 operated by the Eastland Group. | Domestic only | Owned by Eastland Community Trust Gisborne District Council 100% | 22,459 19,594 | na na |
| Hawkes Bay Airport NPE | Opened 1963. Operated by joint venture of local councils & NZ Government. Corporatised 2009. | Domestic only | NZ Government 50%, Napier 25%, Hastings 25%. | 27,332 25,242 | 6.0% Na |
| New Plymouth Airport NPL | Opened 1933. Owned & operated by joint venture between local council & NZ Government. Became a council controlled organisation. | Domestic only | New Plymouth District Council 50% NZ Government 50% | 32,791 30,773 | -0.2% -0.6% |
| Rotorua International Airport ROT | Opened 1963. Originally a joint venture between local council & NZ Government, later taken over by the local government and corporatised in 1990. | Limited International | Roturoa District Council 100% | 22,682 22,092 | 6.2% 2.1% |
| Palmerston North International Airport PMP | Opened in 1958. Founded by City Council. Became Joint venture between city council and NZ Government in 1958. Corporatised 1989. | Limited International | Palmerston North City Council 86.5%, Central Avion Holdings Ltd 13.5% | 65,708 67,395 | 2.7% 2.6% |
| Nelson Airport NSN | Local council owned and operated. Corporatised. 1998 | Domestic only | Nelson City Council 50% Tasman District Council 50% | 50,094 48,073 | 20.2% 22.3% |
| Marlborough Airport BHE | Opened 1939. Local council owned and operated. Corporatised. | Domestic only | Marlborough District Council 100% | 23,660 22,689 | -0.9% 7.5% |
| Queenstown Airport ZQN | Opened 1951. Local council owned & operated. Corporatised. 1989. | Limited International | Queenstown Lakes District Council 75% Auckland Airport 25% | 41,769 43,776 | 6.7% 7.6% |
| | Auckland airport bought 25% share 2010 | | | | |

Source: Annual reports.

reforms that raise the level of efficiency and productivity of state-owned enterprises. Given differences in their scale and ownership structures it is possible to not only look at how productivity changes over time, but also possible to see if there is a link between scale and ownership structure on the one hand and efficiency performance on the other.

In looking at the efficiency of the airports in New Zealand this study uses Data Envelopment Analysis (DEA) and partial productivity indicators to analyse two separate sets of data. In the first part of this study a Malmquist DEA approach is used to determine the change in productivity of New Zealand's three major airports over the longer term (1992–2012). Partial productivity indicators are also used. In the second, part a two-stage methodology was applied to a wider range of airports (over a shorter period). DEA was used to determine relative levels of efficiency of airports in the sample and second-stage regression was then used to determine if there is any link between efficiency levels and scale and ownership type. In the following section of this paper, a description of the background of the reform to the main airports in New Zealand is given. Next is a literature review and description of the methodology used. This is followed by an analysis of their performance during this period and, in the final section, some conclusions are made.

2. New Zealand's airports

In order to understand the nature of the structure of the airport industry in New Zealand, it is necessary to know some background. Aviation is reputed to have begun in New Zealand on the 31 March 1903 when Richard Pearse flew the first heavier-than-air machine (Ogilvie, 2003). Interest in aviation was enthusiastic in New Zealand before the First World War, but it was only after the War that many of the country's aerodromes were built. At this time, aerodrome development was funded mainly by local government authorities and private clubs (Ross, 1955).

The central government became involved and the first regulated activity in the industry came with the passage of the *Aviation Act (1918)*, which provided for the issuing of certificates of proficiency to pilots, licensed flying schools, and prescribed areas for navigation. In 1920 a nine member Air Board was established to act in an advisory capacity to the Government. Later, the *Air Navigation Act 1931* enabled the Government to meet international regulations and the *Transport Licensing (Commercial Aircraft Services) Act (1934)* laid down conditions that applicants had to meet in order to gain a license to start an air-services business. To administer these requirements, the Air Department was established in 1937; it covered both military and civil aviation until 1964 when a Department of

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