

Unsteady Progress

Reform of the Aviation Industry in Fiji

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Abstract

In a country dependent on international tourism, the structure and performance of the civil aviation industry, in the South Pacific island nation of Fiji, is an important economic, political and social issue. In 1999 the industry, with some controversy, was substantially reformed. This paper will trace the events of the reform process and then evaluate the performance of the major commercial entity that was created by the process: Airports Fiji Limited. Despite the controversial nature of the reform, and chequered performance of the company, after an interval of time, the performance of the industry did improve.

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1.0 Introduction

During the 1990s, the Fijian government embarked on an ambitious program of reform of the country's government-owned enterprises. This program involved mainly the corporatisation of these enterprises and the separation of commercial and regulatory functions, but in some cases it also meant privatisation. In undertaking this reform it was hoped that it would lead to the more efficient operation of these government agencies so that they would become less of a burden on taxpayers, who had often been called upon to subsidise their operations. In addition, it was hoped that a more efficient operation of these agencies might create an additional source of revenue for the government.

The central piece of legislation in this reform process was the Public Enterprise Act 1996. In Fiji there were some twenty-eight government-owned enterprises in 1996 that fell into two types: government-owned commercial firms and statutory authorities. After Act was passed, sixteen statutory bodies and government departments were reorganised or were the subject of some sort of reform. Another six were identified as requiring further restructuring. One major example of this reform was the break-up of the Civil Aviation Authority of Fiji in 1999 — a government agency that had been responsible for the country's airports and air traffic management, as well as air safety and security — into two major bodies (the Civil Aviation Authority of the Fiji Islands and Airports Fiji Limited). This was accompanied by the outsourcing of baggage handling and air traffic management to two additional companies.

In a country dependent to a large degree on international tourism, the structure and performance of the civil aviation industry is an important economic, political, and social issue. There was thus a degree of controversy surrounding the reform. The purpose of this paper is to trace the events of the reform process plus the resulting controversy, and to then evaluate the performance of the major commercial entity that was created by the process: Airports Fiji Limited. In doing so, the paper makes a contribution to the literature on two main fields: the evaluation of the performance of airports and on the challenges encountered in reforming public agencies in developing countries.¹

A description of the structure of the paper follows. A background to the Fijian reform process is provided in Section 2. In Section 3, an account is provided of the restructure and reform of civil aviation in Fiji. In Section 4, an evaluation of the performance of Airports Fiji Limited is undertaken using the benchmarking tool known as Data Envelopment Analysis (DEA) and in Section 5, conclusions are made.

2.0 Economic Reform in Fiji

Fiji is an island country in the South Western Pacific with a total land area of approximately 18,333 square km, scattered across some 250,000 miles of the Pacific Ocean. Only about a third of its approximately 300 islands are inhabited, and its capital, Suva, is located on the island of Viti Levu which hosts around 50 per cent of Fiji's total population of

¹For a survey of literature on airport efficiency, see Liebert and Niemeier (2013). For the role of infrastructure reform, see Kessides (2003, 2004) and Kessides *et al.* (2010).

Table 1
Fijian Macro-economic Indicators, 1971–2013 (Annual Averages)

	<i>GDP per capita</i> (constant 2005 US\$)	<i>GDP growth</i> (annual %)	<i>Unemployment</i> (% of total labour force)*	<i>Official exchange rate</i> (per US\$)	<i>Inflation</i> (annual %)	<i>Current account balance</i> (% of GDP)
1971–75	2521	5.8	na	0.821	17.6	na
1976–80	2808	4.2	na	0.863	7.6	na
1981–85	2734	0	7.4	1.008	6.2	na
1986–90	2707	3.1	7.7	1.354	5.4	na
1991–95	2968	2.6	5.7	1.478	4.3	na
1996–2000	3215	2.2	7.3	1.786	3.2	na
2001–05	3510	2.4	5.9	1.957	4.7	na
2006–10	3627	0.7	8.2	1.762	2.7	–10.3
2011–13	3745	2.7	8.3	1.808	2.9	–7.1

Source: World Bank. *National estimate 1981–1995, ILO estimate 1996–2013.

around 837,271 people. Some 57 per cent of these people are indigenous Fijians, 37 per cent Indo-Fijians,² and the rest comprises people of mixed origins (Fiji, Bureau of Statistics, 2007). There have traditionally been latent hostilities between the two main communities.

Fiji's main merchandise exports are sugar and garments/apparel, while tourism is a key services export earner. Tourism earned Fiji F\$1,074 million (US\$599 million) in 2011, which amounts to about 20 per cent of Gross Domestic Product of F\$5,217.4 million (US\$2,910 million) and 30 per cent of total exports (services plus merchandise exports) (Fiji, Bureau of Statistics, 2012). Tourism is, therefore, the largest export earner and as most tourists enter the country by aircraft, the aviation industry plays an important role in Fiji's economic development. The main airport in the country, Nadi Airport, serves more than 1.2 million international and 450,000 domestic passengers annually; this amounts to 96 per cent of all international visitors to Fiji (Airports Fiji Limited, 2011). Nadi Airport also handles twenty airlines with connections to fourteen international cities and on average thirty international flights come through Nadi Airport on any given day (*Fiji Sun*, 13 March 2013, p. 39). Despite the volume of exports from Fiji, the country regularly runs a current account deficit. In the years 2006–2010, for instance, the current account deficit averaged 10.3 per cent of GDP (Table 1).

The course of economic development in Fiji since it gained independence from Britain in October 1970 has been a varied one. The Fiji economy grew at a rate of 5.8 per cent for the first five years after independence (Table 1), largely on the back of expansion in the primary and tourism sectors. This slowed down over the following years as political discord, especially linked to the 1977 elections, affected investor confidence in the country (Table 1; World Bank, 1998). In the early to mid-1980s, Fiji faced the brunt of escalating energy prices and the resultant inflation, three recessions, rising unemployment (Table 1),

²Indo-Fijians are Fijians of Indian origin, the descendants of those who came to Fiji in the late nineteenth century and early twentieth century to work in the cane fields.

and a highly volatile domestic political environment. At this time, Fiji was one among a number of South Pacific countries facing the problem of low performance levels and high wastage levels in the public sector (World Bank, 1998).

During most of the 1980s, Fiji faced a prolonged recession that necessitated strong macro-economic measures. A wage freeze was imposed by the Alliance government in 1985, which was the first substantive step towards public sector reform in Fiji. This helped to bring the Fiji Labour Party unexpectedly into office, which in turn triggered the first military coup of May 1987 led by Lieutenant-Colonel Sitiveni Ligamamada Rabuka. This upheaval disrupted government plans regarding economic reform and the restructuring of the public sector. The period between 1987 and 1990 was one of political uncertainty, as attempts were made to shift Fiji back to constitutional government.

In trying to boost its popular support, the Rabuka government used the government-owned National Bank of Fiji to meet the economic aspirations of indigenous Fijians (Grynberg *et al.*, 2002), by granting special loans and assistance schemes, which in turn led eventually to a reported loss of some F\$250 million (US\$178 million) (Review, November 1995). Policy makers responded by trying to cover the resultant \$250 million fiscal deficit via the sale of public assets and restructuring of government-owned enterprises to make them more profitable (Grynberg *et al.*, 2002; Appana, 2003). Q1

The 1987 coup, as well as requiring the government to seek indigenous Fijian support, also necessitated that systematic measures be taken to restore international investor confidence. The main focus of these reform measures fell on government-owned enterprises. To begin with the protective measures, such as government subsidies and access to credits from government bonds, that had aided government-owned enterprises. In addition, four public enterprises were commercialised and corporatised between 1989 and 1992, during this first phase of public sector reform (Fiji Post and Telecommunications Ltd, Fiji Pine Ltd, IKA Corporation Ltd, and the National Marketing Corporation Ltd). Q2

Some of these government-owned enterprises were originally established as a functional response to market failure, because the products involved could not be provided efficiently by the private sector. Fiji Post and Telecommunications, the Ports Authority of Fiji, the Fiji Electricity Authority, and the Civil Aviation Authority of Fiji were examples. These enterprises' establishment was a source of some pride and achievement for both Fijians and the Fiji government in the 1970s and by 1996, and they were responsible for accounted for 25 per cent of investment and 30 per cent of employment in the local economy (Fiji, Department of Public Enterprises, 1998, p. 9). By the 1990s, however, all of the government-owned enterprises in Fiji were operating at low levels of efficiency and profitability prior to the commencement of the more substantive round of reforms in 1996. In many cases, instead of being a source of revenue for the government, they were a net drain on the state's financial resources. Q3

The return on assets from these enterprises stood at only 2.7 per cent on average in the mid-1990s, whereas the cost of funds to the government was 8.5 per cent. The government set a required return on assets at 15 per cent — a target that was not met, initially, by most public enterprises. Instead the public enterprises meant a loss to the government of an estimated \$F25 million (US\$13 million) a year in tax losses and other opportunity costs (Fiji, Department of Public Enterprises, 1998). Some of the reasons identified for this poor performance of government-owned enterprises included: a lack of accountability, corruption, over-staffing, and cronyism (Fiji, Department of Public Enterprises, 1998, p. 6).

With the defeat of Rabuka's government at elections in May 1999 and the installation of the People's Coalition Government, under former trade unionist Mahendra Chaudhry as Prime Minister, policy focus shifted to corporatisation rather than outright privatisation.³ The People's Coalition Government was, however, removed in May 2000 by a second military coup, and this had further implications for public sector reform. An interim administration took office and after elections in August 2001, a new government was installed. This new government renewed the commitment to public sector reform.

In addition to the poor performance of the government-owned enterprises, and the drain on public funds, there were a number of other, not-so-obvious factors that prompted the shift in policy from traditional public enterprise to restructuring towards corporatisation. A major push for restructuring came from the senior management of the government-owned enterprises themselves, especially where there was some prospect of them gaining more lucrative positions after the restructure. This was clearly the case, for instance, at the Civil Aviation Authority of Fiji, where much of the senior management enthusiastically supported the reform of their authority. The restructure of Civil Aviation Authority of Fiji took place in April 1999 when it was separated into the Civil Aviation Authority of the Fiji Islands and Airports Fiji Limited, in what proved to be one of the more controversial reforms.

3.0 Aviation in Fiji

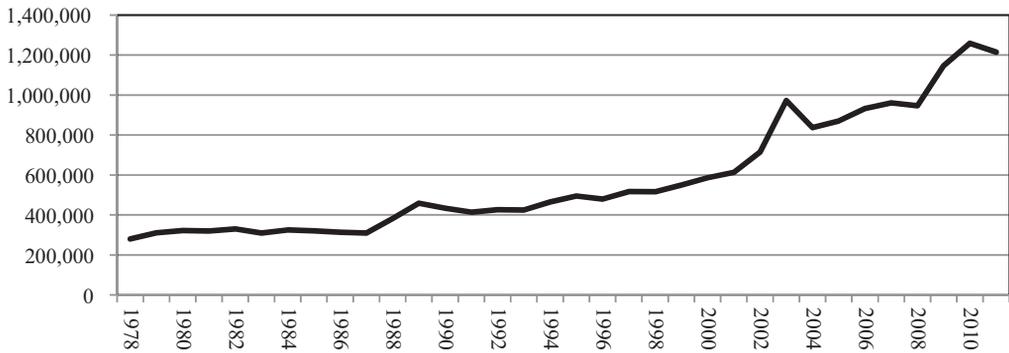
Reform of the structure of the aviation industry was an important part of the reform process in Fiji during the 1990s. Aviation has long played a particularly important role in Fijian economic development due to its contribution to the development of the tourism industry. The original airstrip at Nadi on the west side of Viti Levu was built by a New Zealand construction company between August 1939 and March 1940; it was paid for jointly by the New Zealand and Fijian colonial governments. It was extended by the New Zealand government and the Public Works Department of Fiji after November 1941 to accommodate larger American military aircraft, which meant that in the post-war era, it was capable of accommodating large civil passenger aircraft. The airfield was used by the New Zealand and United States air forces during the Second World War, as was the other major airfield built by New Zealanders during the war at Nausori near the capital, Suva (Gillespie, 1952).

After the war, control of the two airfields was handed over to the Civil Aviation Administration of the Air Department of the New Zealand government, which operated the major airports in Fiji until 1978 (Department of Civil Aviation between 1964 and 1968; Ministry of Transport between 1968 and 1978). After Fiji achieved its independence from Britain in 1970, it sought to take over the operation of its main airports and the Civil Aviation Authority of Fiji (the Authority) was created to undertake this (Nadi International Airport, 1996; McGreal, 2003).

The Civil Aviation Authority of Fiji was formed in 1979 and had two major functions: air traffic management and airport operation, but it was also responsible for safety and

³Industrial disputes at Airports Fiji Limited and union struggles against the *Sogosoqo ni Vakavulewa ni Taukei* government's reform program helped to shift public opinion against the government (Snell, 2000).

Figure 1
Number of Air Traffic Passengers Carried, International and Domestic, in Fiji: 1979–2011

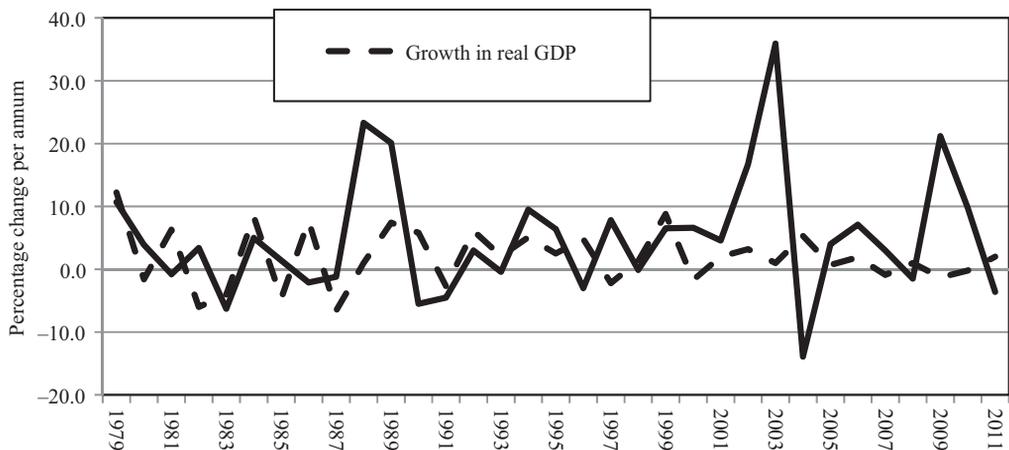


Source: World Bank development indicators.

security in the industry in Fiji. After 1978, the aviation industry expanded as the numbers travelling both into and within the country rose steadily, with only a few years of downturn, such as in early 2004 when the industry was affected by a cyclone that claimed the lives of a number of people (Figure 1). As well as bringing international tourists into the country, the aviation industry played an important role in transporting tourists to resorts on the distant islands of Fiji as well as enabling Fijians to travel between the islands. The number of air passengers tended to grow at a faster rate than the economy overall (Figure 2), although it is also noticeable that passenger traffic tended to fluctuate more widely than growth in real GDP.

After its establishment, the CEO of the Authority through most of its existence (1982–1998) was Jone Koroitamana, who was eventually removed from the post in order to facilitate the restructure of the Authority. His own attitude to the restructuring proposals was to

Figure 2
Annual Growth in Air Travel Passengers and Real GDP in Fiji: 1979–2011, Percentage Change Per Annum



Source: World Bank development indicators.

oppose any break-up of the Authority based on its function areas of responsibility (that is, commercial and regulatory) on the grounds that in a country as small as Fiji, the pooling of knowledge in a single organisation was the most efficient way to provide aviation services (Appana, 2013).

Before the reform of the Authority took place, an International Civil Aviation Organisation report titled 'Organisational Study at the Civil Aviation Authority of Fiji', prepared on behalf of Civil Aviation Authority of Fiji in March 1990, recommended the re-engineering of the processes of the Authority. An internal restructure was recommended, but not the separation of the Authority into a regulatory body and airports corporation, which was to happen later. Following this report, after some delay, Koroitamana embarked on a gradual process of 'reorientation towards a commercial focus' in 1996. He believed that a 'tightening of management rather than wholesale restructure was the answer at Civil Aviation Authority of Fiji' (Appana, 2013).

Policy makers, however, were not impressed with the pace of change, and after 1996 the reform process was speeded up. A Charter Committee was established to investigate the restructure of the aviation industry in Fiji, which excluded Koroitamana. Furthermore, in January 1998, Harvey Probert took over from Charles Walker (a Koroitamana sympathiser) as Chairman of the Board of the Authority, with a clear mandate to begin the restructure process. Probert in turn was replaced a year later by Dixon Seeto as Chairman of the Board in January 1999, when the restructure process became a matter of urgency. According to Sitiveni Weleilakeba, it was also in January 1999 that he (Weleilakeba) became the Chairman of Airports Fiji Limited, even though Airports Fiji Limited only existed on paper at that point in time (Appana, 2013).

What eventuated was a process that led to the creation of Airports Fiji Limited as a fully government-owned company in April 1999, responsible for the commercial operation of the airports of Fiji. Separated from the airports company was a new body responsible for enforcing the safety and security standards in the aviation industry in Fiji: the Civil Aviation Authority of the Fiji Islands. In undertaking reform, the government of Fiji was influenced by the New Zealand experience where a Civil Aviation Authority was created in 1992 to regulate standards in the industry (Duncan and Bollard, 1992; Appana, 2013). One crucial difference between Fiji and New Zealand is that in the former, the airports are all run under the jurisdiction of the national government, so a single company was formed to run all Fijian airports. In New Zealand, the airports were the creation of local government and so each had a different local government authority owner, leading to the creation of a number of airport companies, some later being privatised (Auckland and Wellington).

This reform clearly followed the generally accepted view that commercial and regulatory functions should be kept separate so as to avoid conflicts of interest. It was seen as being necessary to establish manageable organisations that could 'gain the efficiency advantages of franchise arrangements inside as well as outside the public sector' (Hood, 1991; Boston *et al.*, 1996). The new agencies would then be set goals relevant to the nature of their functions. In terms of the commercial elements, the hope was that a more focused organisation would be able to improve its cost efficiency and increase returns to the government. In terms of the regulatory element, it was hoped that a more focused organisation would be able to achieve its goals as well. In making this split, any conflicts of interest between maximising returns and meeting regulatory requirements would be diminished.

Despite opposition from some, this separation was generally accepted by most in the industry. A more controversial step, however, was the contracting out of air traffic management to a private company that had been created for this purpose: Strategic Air Services Limited.

The second element of the reform, therefore, involved the separation of potentially competitive elements of the commercial organisation (such as air traffic management) and concentration of monopoly elements into a standalone entity. In the case of an airport, because of land requirements they are often monopolies, whereas ancillary services can often be provided through competitive tendering (that is, catering, related transport services, traffic control, and so on). Competitive tendering, it was hoped, would lead to greater efficiencies in this area. Whether these gains were realised or not depends upon the level of potential competition in these markets. Although there were potential gains from this process, there are also potential losses as well. These are the losses associated with greater transaction costs between the new entities and the lack of pooling of knowledge that a single organisation might undertake.⁴

In the case of contracting out air traffic management and baggage handling services, the contracts were granted to firms created out of the Civil Aviation Authority of Fiji, rather than being granted through a process of competitive tendering, even though some overseas companies expressed a willingness to tender. This meant that the potential gains from competition were eliminated. After 2006, with the collapse of the company, Strategic Air Services Limited, Airports Fiji Limited took back the air traffic management role.

The process of reform of the civil aviation industry in Fiji, therefore, took place with a fair degree of controversy, first surrounding the choice of best possible structure, and then with the contracting out of services to private companies (Snell, 2000; Appana, 2013). This level of controversy was common throughout the reform of government-owned enterprises in Fiji, not just in the case of civil aviation but also in other fields (Sarker and Pathak, 1999; Narayan, 2008; Lawrence and Sharma, 2010). Despite the controversy surrounding the process, it is possible to observe the degree of success (or otherwise) of the new structure once it had operated for a number of years.

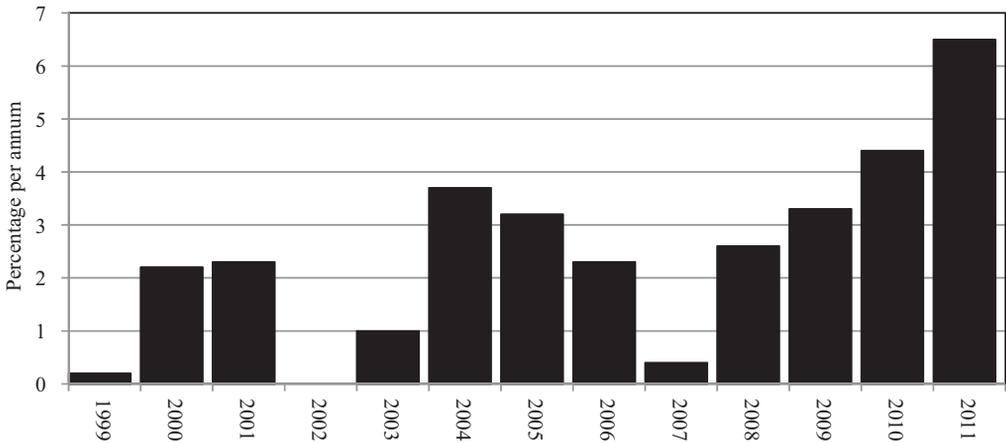
4.0 Performance of Fiji's Airports

Despite criticisms of the process of reform, the post-reform period in civil aviation does seem to have some redeeming characteristics. It can be seen from Figure 1 that civil aviation growth in Fiji after the reform took place in 1999 was strong. Airports Fiji Limited was able to carry out this expansion without incurring substantial costs to the government in terms of operating losses (Figure 2), as had commonly been the case before the reform process when the Authority was often in receipt of operating subsidies and capital grants (Civil Aviation Authority of Fiji, 1978–1998).

The way that the performance of a commercial organisation performance is normally assessed is by looking at the rate of return on assets. After the creation of Airports Fiji

⁴It is notable that although the Fijian reforms were influenced by the reforms that had taken place in New Zealand in the latter case, although air traffic management was separated from airports (into a company known as Airways New Zealand), the resulting company has always remained a state-owned enterprise and has never been privatised.

Figure 3
Rate of Return of Airports Fiji Limited (EBIT/Total Assets); 1999–2011



Source: Airports Fiji, *Annual Report*.

Limited, its returns improved compared to what was generated before. Figure 3 shows the rate of return (the earnings before interest and tax, divided by the total assets) between 1999 and 2011. What can be seen from the figure is that the company tended to make a reasonable return, except in a few years of general downturn.

In the case of government-owned businesses, rates of return are not always the best performance indicators. Government organisations often function with costs and prices altered by subsidies, regulations, or the use of market power. This means that the usual indicators of performance, like rates of return and profitability, cannot be utilised on their own to assess a company’s performance accurately. In spite of these difficulties, governments are still concerned that these organisations function efficiently.

In order to appreciate better the changes to Fijian civil aviation, estimates of the growth of total factor productivity (the ratio of an output index to an input index) have been made. One way to determine changes over time in productivity of airports is to use the DEA Malmquist approach. DEA is a non-parametric technique that makes use of linear programming to benchmark decision-making units in a sample against each other. If data is used over time, it is possible to benchmark the units against each other over time, therefore producing changes in productivity over time. It has an advantage in that it can be used in circumstances where output and input prices are distorted by market power or restrictions imposed by the government (Fare *et al.*, 1985).

The Malmquist DEA method makes use of panel data to determine technical efficiency, technological progress, and total factor productivity changes of a sample of like organisations. The method, in effect, determines an efficiency estimate in one year compared to the previous year, and then breaks down the components that drive the productivity change into technological progress and technical efficiency change (which is in turn broken down into pure efficiency change and scale change). Pure technical efficiency is the difference between the ratio of combined quantities of outputs to inputs and the ratio achieved by the best practice unit, and can be attributed to managerial practices.

Scale efficiency is the degree to which an organisation can take advantage of returns to scale, by altering its size towards the optimal scale. Technological progress is the degree to which the best practice unit increases its efficiency over time (that is, shifts the best practice frontier outwards) and total factor productivity change is the amount by which the ratio of outputs to inputs in total improves over time.

The DEA Malmquist method has in the past been used to determine total factor productivity change over time of airports in a number of countries including: the (Yokomi, 2005; Barros and Weber, 2009), the United States (Gillen and Lall, 2001; Barros and Assaf, 2009), Australia (Abbott and Wu, 2002), Spain (Murillo-Melchor, 1999), Latin America (Perelman and Serebrisky, 2010), Asia (Hsu-Hao Yang, 2010), and China (Fung *et al.*, 2008; Chi-Lok and Zhang, 2009). The limitations of total factor productivity generally revolve around the inability to define and measure all outputs and inputs used. Generally it is best to use these measures along with other measures of performance, such as the financial ratios used in this paper, to get the best appreciation of a commercial organisation's performance.

Q4

In this case, the sample chosen was the airports of Airports Fiji Limited, along with five Australian airports (Sydney, Melbourne, Brisbane, Adelaide, and Perth) and three New Zealand airports (Auckland, Wellington, and Christchurch). It is worth keeping in mind that there are two fundamental differences between the Fijian company and that of the Australian and New Zealand companies. In the former case, the company is made up of two major and a number of minor airports. In the case of the latter two countries, the sample is made up of single airport companies operating sizeable airports. In addition, a number of the Australian and New Zealand airports are of far greater size than the Fijian ones. Airports with greater volumes of traffic often reap scale economies that make them more efficient than smaller airports. The purpose of this study, however, is not to judge if the Fijian company is relatively efficient in absolute terms compared to airports outside of the country, but instead to see if its own level of efficiency changes over time and if it is improving over time compared to the industry, more generally, in the South-West Pacific region.

To apply this approach, a definition of outputs and inputs of the airports needs to be undertaken. In the past, most studies have used some variation of outputs, such as air traffic movements, passenger numbers, and volume of cargo as indicators of output, labour employed as the labour input and some combination of land, runway length, terminal space, and number of gates as an indicator of capital inputs. Using air traffic movements as an indicator has some problems in the case of Fiji as there has been a process in recent years of using larger (and fewer aircraft) to carry more passengers to and around Fiji. For that reason, it is better to use the number of passengers as the indicator of output. For inputs the runway length, numbers employed, and non-salary costs (converted to US\$ purchasing parity levels in constant dollar terms) are included. The Malmquist Index was derived using the program DEAP (Coelli *et al.*, 2005). The results of the DEA Malmquist are presented in Table 2. Tables 3 and 4 also show single-year benchmarking figures for the years 2004 and 2011.

As well as determining changes in productivity over time, DEA has also been used to benchmark the operations of airports in a single or a number of years. These studies include those for Britain (Tolofari *et al.*, 1990; Parker, 1999; Bazargan and Vasigh, 2003), North America (Gillen and Lall, 1997; Sarkis, 2000; Sarkis and Talluri, 2004), Spain (de la Cruz, 1999; Martin and Roman, 2001), Brazil (Pacheco and Fernandes, 2003; Fernandes

Table 2
Growth in Total Factor Productivity, Major Airports in Fiji, Australia, and New Zealand, 2004–2011

<i>Airport</i>	<i>Technical efficiency change</i>	<i>Technological change</i>	<i>Pure technical efficiency change</i>	<i>Scale efficiency change</i>	<i>Total factor productivity change</i>
Airports Fiji	1.183	0.944	1.200	0.986	1.117
1	1.006	1.019	1.000	1.006	1.024
2	1.000	1.023	1.000	1.000	1.023
3	1.000	1.005	1.000	1.000	1.005
4	1.036	0.962	1.026	1.010	0.996
5	1.060	0.970	1.049	1.011	1.028
6	0.987	1.031	1.000	0.987	1.017
7	0.951	0.964	1.000	0.951	0.917
8	1.050	0.944	1.026	1.023	0.991
Mean	1.029	0.984	1.032	0.997	1.012

Source: Estimated from data taken from: Australian Competition and Consumer Commission 2004–2011; Airports Fiji Limited, *Annual Report*; Auckland Airport, *Annual Report*; Wellington International Airport, *Annual Report*; Christchurch International Airport, *Annual Report*.

and Pacheco, 2005), the Baltic region (Jarzemskiene, 2012), Japan (Yoshida and Fujimoto, 2004), Europe (Pels *et al.*, 2001, 2003), and worldwide (Graham and Holved, 2000; Adler and Berechman, 2001).

What one finds in Table 3 is that Airports Fiji Limited is easily the least efficient airport company in the sample. This company's technical efficiency level is only 0.242 compared to the best practice airport (airports 2 and 3) and an overall average of 0.809. Part of this would have been caused by the need to employ additional staff and to maintain small-sized, low-use airfields around the smaller islands. But what one finds is that when the same exercise is undertaken for the year 2011, the gap between Fiji and the others in the sample has narrowed considerably. By then, technical efficiency has risen to 0.725, still

Table 3
Technical and Scale Efficiency of Fijian, Australian and New Zealand Airports, 2004

<i>Airport</i>	<i>Technical efficiency</i>	<i>Pure technical efficiency</i>	<i>Scale efficiency</i>	<i>Estimated returns to scale</i>
Airports Fiji	0.242	0.641	0.377	irs
1	0.961	1.000	0.961	drs
2	1.000	1.000	1.000	–
3	1.000	1.000	1.000	–
4	0.758	0.773	0.980	drs
5	0.609	0.632	0.963	irs
6	1.000	1.000	1.000	–
7	1.000	1.000	1.000	–
8	0.710	0.776	0.915	drs
Mean	0.809	0.869	0.911	

Source: Estimated from data taken from: Australian Competition and Consumer Commission 2004–2011; Airports Fiji Limited, *Annual Report*; Auckland Airport, *Annual Report*; Wellington International Airport, *Annual Report*; Christchurch International Airport, *Annual Report*.

Table 4
Technical and Scale Efficiency of Fijian, Australian and New Zealand Airports, 2011

<i>Airport</i>	<i>Technical efficiency</i>	<i>Pure technical efficiency</i>	<i>Scale efficiency</i>	<i>Estimated returns to scale</i>
Airports Fiji	0.784	1.000	0.784	irs
1	1.000	1.000	1.000	–
2	1.000	1.000	1.000	–
3	1.000	1.000	1.000	–
4	0.971	1.000	0.971	irs
5	0.914	0.921	0.993	irs
6	0.911	1.000	0.911	irs
7	0.705	1.000	0.705	irs
8	1.000	1.000	1.000	–
Mean	0.921	0.991	0.929	

Source: Estimated from data taken from: Australian Competition and Consumer Commission 2004–2011; Airports Fiji Limited, *Annual Report*; Auckland Airport, *Annual Report*; Wellington International Airport, *Annual Report*; Christchurch International Airport, *Annual Report*.

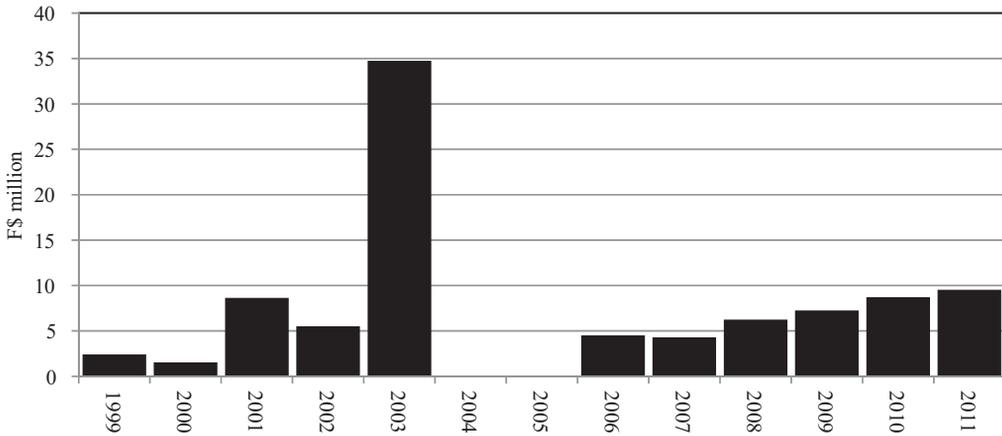
below the mean of the airport companies but far closer to the best practice companies and the mean level of the sample.

What this means is that during the period studied, Airports Fiji Limited improved both its level of scale efficiency and pure technical efficiency. Table 2 illustrates this improvement in the productivity and efficiency of Airports Fiji Limited and the other eight airports in the sample. In the case of the latter, airport efficiency and productivity change was non-existent, whereas Airports Fiji Limited saw a substantial rise in productivity (an average 11.7 per cent per year). This improvement was brought about by an increase in pure technical efficiency — that is, an improvement in the management of resources such that a movement towards the best practice frontier has occurred. Despite, therefore, early problems with industrial relations, and financial losses associated with the contract with Strategic Air Services Limited, cost-cutting measures at Airports Fiji Limited and better management of rental space within the airport complexes finally led to improvements in efficiency.

Given the improvements in efficiency, then, it seems reasonable to determine just who gained from the process. As the original aim was to increase government revenue, the first point to look at is the dividend payments that were made to the government from Airports Fiji. In 2001, Airports Fiji limited paid out F\$1 million (US\$439,000) in dividends to the Fiji government (Airports Fiji Limited, *Annual Report*, 2001). This rose to a peak of F\$3 million (US\$1.6 million) in 2010, and dividends again dropped to F\$1 million in 2011 (US\$518,000) (*Annual Report*, 2011). These sorts of sums were no greater than those that the Civil Aviation Authority paid before the reform process took place.

The small size of the dividend payments stands in contrast to the actual surpluses generated by the company. Earnings (before interest and tax) in 2011 were, for instance, F\$13 million (US\$7.3 million). The bulk of these earnings, however, were retained by Airports Fiji Limited and used to fund capital expenditure as well as to pay down the debt levels of the company. Figure 4 shows that there was a considerable rise in capital expenditure by Airports Fiji Limited during the second half of the 2010s. In addition the liabilities of the company were paid down from a peak of F\$73 million (US\$43 million) in 2005 to only F\$52 million (US\$29 million) in 2011.

Figure 4
Capital Expenditure, Airports Fiji Limited, F\$ Million, 1999–2011



Source: Airports Fiji, *Annual Report*.

It is also notable that the aeronautical revenue of Airports New Zealand did not rise during the decade. In 2005, aeronautical revenue was F\$31.5 million (US\$18.6 million). By 2011, it had risen to F\$37 million (US\$20.6 million) in nominal terms, which is F\$28 million in constant (inflation adjusted) 2005 dollar terms — a slight fall. In terms of passenger numbers, the fall is even more marked. In 2005, aeronautical revenue was F\$18 per passenger, which by 2011 had fallen to F\$12 (in constant 2005\$ terms).

The main beneficiaries of the reform, therefore, would appear to have been the customers of the airports who received reductions in aeronautical charges and increases in expenditure on expanded and better facilities. If the Fiji government gained at all, it was in the form of increases in tourist activity in the country encouraged by the improvements in service provision to customers of Airports Fiji Limited.

In the course of microeconomic reform, the process has often been criticised as not sufficiently benefiting general consumers, but instead either favouring those in government (who can use the funds for lowering taxes or spending on other public schemes that are politically popular) or the new private owners of the facilities who are able to exploit positions of market power. In the case of the reform of Fijian civil aviation, it would appear that it was the airlines and their customers who have most benefited from the reform.

5.0 Conclusion

The break-up of the Civil Aviation Authority of Fiji in 1999 was a controversial reform, one that attracted a fair degree of criticism at the time. At that time, it followed a fairly accepted international model of aviation industry restructuring, although there were some who viewed the Fijian industry as being too small to justify the break-up of the Authority. In the long run, however, the reform process did enjoy some degree of success. It took some time for the industry to readjust to the new circumstances, but eventually some benefits did flow through from the change.

It is noteworthy that Airports Fiji Limited generated enough revenue to finance the capital expenditure needed to facilitate a steady growth in tourism passengers arriving in, and travelling around, Fiji. During the 2000s, the numbers travelling to and around Fiji grew steadily and Airports Fiji Limited was able to raise enough capital from its own operations to finance any expenditure on expansion of its facilities.

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Author Query Sheet

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Paper Authors Appana and Abbott

- 01 **Review, November 1995:** April in references.
- 02 **To begin with the protective measures that had aided government-owned enterprises:** is there text missing at the end of this sentence?
- 03 **they were responsible for accounted for:** delete either 'responsible for' or 'accounted for' as preferred.
- 04 **including: the:** country name missing (e.g. the United Kingdom?).