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Note

International arrivals to Australia: Determinants and the role of air transport policy

Yahua Zhang

School of Commerce, University of Southern Queensland, Toowoomba, QLD 4350, Australia

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ABSTRACT

Air transport policy, national income, bilateral trade volume, distance, common language and immigration are significant determinants of international arrivals to Australia. The close link between aviation policy and the number of international travellers might suggest that Australia has benefited from the liberalisation of the airline industry globally in recent decades.

1. Introduction

Australia is geographically remote and so air services are vitally important in connecting the country to the world through facilitating the movement of goods and people. Aviation is crucial to Australia's tourism industry: more than 99% of inbound visitors to Australia arrive by air (DITRDLG, 2009). There were 6.3 million short-term visitor arrivals to Australia in the 2012–13 financial year (ABS, 2013). These visitors intended to stay less than 12 months: 45% came for holidays and 25% intended to visit friends and relatives. Air transport is a significant driver for the development of the tourism industry. This is even more so with the emergence of low cost carriers (LCCs) around the world.

Good air transport links are important for companies in determining their business locations (Patterson, 2008). In 2013 about 11% of the short-term visitors to Australia were for business purposes (ABS, 2013). As more foreign companies establish subsidiaries in Australia and invest in Australian firms, or as Australian firms continue to outsource jobs overseas, there will be higher demands for business-related travel.

Australia has the most liberalised environment in the Asia–Pacific region according to Zhang and Findlay (2014). It has been keen to pursue more liberal and multilateral arraignments to facilitate the flows of goods and people. For example, Australia has allowed 100% foreign investment in domestic airlines and signed Open Skies agreements with New Zealand and the US. There are no restrictions on the capacity and frequency of the services with Singapore and the UK. In the 2012–13 financial year, fifty-four international airlines operated services to/from Australia, carrying 30.3 million international passengers, an increase of 4.9% compared to 2011–12 (ABS, 2013). Qantas has the largest market share in terms of the number of international passengers carried, although its share gradually decreased in the last decade from 32.7% in 2002–03 to 17.2% in 2012–13. The share of passenger traffic carried by Australian designated airlines, namely, Qantas, Jetstar and Virgin Australia, remain relatively stable in the last 10 years, ranging from 34.3% in 2002–03 to 31.4% in 2012–13 (ABS, 2013). LCCs such as Air Asia X, Indonesia Air Asia, Jetstar, Jetstar Asia, Scoot and Tiger Airways together command a market share of about 14% in 2012–13. There has been a decrease in the LCC share in recent years due to the fact that the full service brand Virgin Australia replaced and consolidated its low cost subsidiaries in 2011.

Many studies have examined the factors influencing international arrivals in Australia (see, for example, Seetaram, 2010, 2012). However, apart from airfares, aviation-related factors such as air transport policy and the role of LCCs have been largely ignored. Warnock-Smith and O'Connell (2011) noted that air traffic and the consequent incoming tourism expenditure could be at least partially stimulated through changes in aviation policy. Using the air transport policy index developed by Zhang and Findlay (2014), the paper aims to examine the policy impact on short-term visitor

E-mail address: yahua.zhang@usq.edu.au.

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arrivals. This study also confirms that merchandise trade volume and immigration are important determinants of international arrivals to Australia.

2. Methodology and data

The tourism literature has shown that the most important determinants of tourist flow are tourists' income, real exchange rates and tourism prices in the competing destinations. As more than 99% of inbound visitors arrive in Australia by air (and more than 10% of them are business travellers), we should also consider the determinants of air travel demand, which include economic variables (such as income), location elements (including distance and other geographical characteristics), and the quality and price components of the airlines (Wang and Song, 2010). A travel demand model will be estimated in this study with the dependent variable being the number of short-term arrivals (ARR). As the aviation policy variable used in this study was constructed based on the information valid in 2009, which would have an impact on international air travel in the subsequent years, monthly arrival statistics from 40 countries for the period January 2009–December 2013 are used in this study. The data are available from the official website of the Australian Bureau of Statistics (ABS, 2013).

Independent variables include gross domestic product (GDP), price and cost variables, aviation-related factors and other dummies. The annual GDP data used in this study are available from the World Bank. Due to the unavailability of travel cost data, the price of crude oil is often used to represent the cost of travel in many studies (see, for example, Garin-Munoz, 2006). Jet fuel price (FUEL) is used as a proxy for this variable in this study. The jet fuel price data were reported by the US Energy Information Administration and the monthly average is used in our model estimation. Another cost variable is the great circle distance (DIST) between Sydney and the capital city of the origin country of the inbound travellers. The great circle distances are in the *Australian Air Distances Directory* compiled by the Australian Bureau of Infrastructure, Transport and Regional Economics (BITRE).

It is expected that the lower the cost of living in the destination, the more likely are people to travel to there. The real exchange rate (RER) variable measured by the prices of goods and services in Australia relative to the cost of living in the origin country adjusted by the nominal exchange rate is thus included. The monthly data for the nominal exchange rate and the consumer price index (CPI) can be found in the Global Economic Monitor of the World Bank. The real exchange rates are converted into an index with January 2009 being the base year.

The price of substitute products should be included in the demand model as a typical tourist would consider the price of an alternative destination before making a travel decision. The real effective exchange rate (REER) for the alternative destination is used to measure the price of a substitute. The REER measures the real value of a country's currency against the basket of the trading partners of the country. The REER data are also from the World Bank's Global Economic Monitor. Following Seetaram (2012), the UK is taken as the alternative destination for tourists from Canada, the US, Mexico, Hong Kong, South Africa, the Middle East and South East Asia while the US is considered an appropriate alternative for tourists from China, Japan, Korea, Taiwan and Europe. For South East Asian and Fijian tourists, New Zealand is taken as a proper substitute for Australia. It is assumed that the likely alternative destination for New Zealand travellers is Fiji.

Following the air transport policy index developed by Zhang and Findlay (2014), the origin country's aviation policy (POLICY) on the privatisation of the national carrier, foreign ownership restrictions, the establishment of LCCs, multiple designations, and open skies agreements are considered to construct an index to reflect a country's overall aviation environment. The value assigned to each policy component is in Table 1. The components can be summed to form an overall index, the values of which range from 0 to 5. The higher the score, the higher is the level of restrictiveness. Readers should refer to Zhang and Findlay (2014) for the justification of including these policy indicators. The policy indices for members of the European Union are the same as they have established a single aviation market.[1] The information for various components comes from the origin country's aviation authorities and relevant airline websites. It was valid at the end of 2009.

Table 1
Policy indicators.

Aviation market regulations and liberalisation constraints		Score
Privatisation of national carrier	Government does not have majority ownership control	0
	Government controls the majority of ownership	1
Foreign equity participation in the domestic airline	Foreign ownership limit is greater than 50% (inclusive), or adopt principal place of business	0
	Foreign ownership limit is less than 50%	1
Establishment of LCCs	Has an established LCC which has actively engaged in both domestic and international service provision	0
	No effective LCCs (small in size with limited services)	1
Multiple designation on international routes	Two or more carriers, including private carriers, roughly having equal right to fly international routes	0
	The flag carrier is predominantly the designated airline servicing international routes	1
Open skies agreement	Has signed an open skies agreement with at least one country	0
	Not yet signed an open skies agreement	1

In the 2012–13 financial year 54 international airlines operated services to and from Australia, carrying 30.3 million international passengers (BITRE, 2013). LCCs together commanded a market share of about 14% in 2012–13. The number of carriers (CARRIERNO) that provided direct air services is included in the model to see if direct air services would create more air traffic. We also consider the effect of LCCs and so include this dummy when a LCC was present between Australia and the origin country of the inbound travellers. A common language dummy variable (LANG) is included if English is an official language for the origin country. In addition, quarterly dummies are also incorporated in the model.

Seetaram (2012) argued that immigration can act as a catalyst for international tourism flow and that immigrants who retain or forge business links with their origin country may stimulate business travel. Dwyer et al. (2014) has confirmed that there is a strong relationship between migration and the tourism associated with visiting friends and relatives. Therefore, an immigration dummy (IMMI) that captures the top 10 countries of birth for Australia's overseas-born population is included.

Leitao (2010) provides evidence that bilateral trade has a positive impact on tourism demand. Therefore, total bilateral merchandise trade (TRADE) is included in the demand models. The monthly bilateral merchandise trade is the sum of exports and imports reported by ABS (2014).

A dummy variable (EUdummy) denoting the originating country's membership of the European Union (EU) is included given the

[1] The aviation policy index for each country for this study is available upon request.