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Value of travel time savings and willingness to pay for regional aviation

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ABSTRACT

Despite their immense importance to regional and remote communities, regional air services are often commercially not viable and need public support. That support, and hence the existence of such lifeline services, is often questioned by stakeholders and policy makers. While the value of these services is high to the passengers and businesses that are located in regional, rural and remote areas, there is only anecdotal and no robust evidence available on the value of such services to people who live in metropolitan areas. This paper applies mixed logit choice models to a large sample of the Sydney metropolitan area to establish, for a first time, empirical evidence on the value of travel time savings (VTTS) and the willingness to pay for regional air services. While car is the most preferred option for regional travel (chosen most), we find a median willingness to pay of $99 per hour for leisure travel via plane and $153 per hour for business travel. Additional analysis on VTTS for different modes across leisure versus business travel is also conducted, providing for a more detailed understanding of each traveller type and willingness to pay differences between the various groups. The findings are of substantial value to regional airlines, airports, regulators, funding bodies and policy makers as they show that regional aviation is not only invaluable to the regions but also of high value to residents and business travellers residing in metropolitan areas.

1. Introduction

Air services are of substantial importance to regional and remote businesses and communities. They provide freedom and opportunities, despite being commercially non-viable in a large number of thin route settings, and also contribute significantly to the economic development of regional areas (Baker et al., 2015). For many communities, air links represent critical life line services to all stakeholders located in regional, rural and remote areas. Given their importance, regional air services are often seen as merit goods and are hence in some form or another publicly supported. Merkert and O'Fee (2013) provide an overview of potential government intervention strategies, which include direct and indirect subsidies (to airlines, airports and/or residents located in regional areas such as small islands), revenue guarantees, minimum service level requirements and temporary protection from competition on the routes. In regards to the latter it is common practice that transport authorities either directly award or tender/license regional (subsidised/non-subsidised) air service contracts for which operators then bid, which is seen as competition for the market rather than within the market, as the operators then usually enjoy monopoly rights on those routes for the duration of the transport contract. In the Australian context, there is a further

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government intervention - the so called-ring fencing of the largest metropolitan airport, Sydney Kingsford Smith airport. This regional ring fence assures regional airlines a certain number of slots at Sydney Airport, in particular during peak hours, under legislation passed in conjunction with the privatisation of the airport in 2002. Such schemes and other government interventions are now also considered at other major national hubs and international gateways, for example at London Heathrow where all but six regional services had been priced out by 2015 resulting in regional UK losing its connectivity to London and international flights as well as future trade and job opportunities (e.g. Transport for London, 2015). However, such government intervention does usually not come with benefits only but also with costs for the various stakeholders. For example, while on the one hand Sydney Airport Corporation (SACL) publicly supports the ring fence mechanism, on the other hand it lobbies for relaxing the ring fence regulation in order to maximise the return from slots by pushing out flights/aircraft of less than 50–100 seats and thereby making room for international flights that use larger aircraft such as the A380 with up to 500 seats. Although SACL has already one of the highest airport EBITDA margins globally (Merkert and Assaf, 2015), their desire to optimise slots is economically understandable as the airport is getting close to capacity at peak hours. This means that not only the airport operator and larger airlines pay the price for the ring fence regulation in the form of opportunity cost, but also businesses and residents located in the metropolitan areas. There is therefore a trade-off between the benefits of the ring fence and regional aviation more generally and the cost to the wider economy and the metropolitan area of Sydney in particular.

Even though the ring fence intervention is specific to large congested hub airports, it helps to illustrate our more general research question, namely to reveal the value of travel time savings (VTTS) and willingness to pay (WTP) for regional aviation of those who are located in the metropolitan area of the regional air link. It is well established that regional aviation has significant benefits to regional and remote areas which justifies public support. The value of such air services to businesses and passengers who are resided in remote and regional areas is hence high. What is less clear is the VTTS and WTP for such services for those businesses and residents who are located in large cities such as Sydney.[1] This paper aims to provide answers to this question by applying a mixed multinomial choice model to a large sample of Sydney metropolitan area residents to establish empirical evidence on the VTTS and WTP for regional air services. The following section reviews the international literature on valuing VTTS and WTP in the aviation context. Section 3 details the methodology and sample of our study, and in Section 4 we discuss the empirical findings. Summarising the results, Section 5 offers conclusions and recommendations for further research.

2. Literature review

Value of travel time savings (VTTS) and WTP studies are often used to justify policy measures or as part of cost benefit analysis exercises related to large transport or infrastructure investments. The literature on VTTS and WTP for transport (i.e. ground transport) is well established (for a review see for example, Li et al., 2010; Wardman, 2014). What all of these studies have in common is the assumption that consumers behave rationally by choosing according to their preferences which can be expressed as a utility function that allows estimation of demand and price elasticities. In other words, consumers are assumed to act as if they are utility maximisers subject to their income, preferences and time constraints. Revealed preference (RP) and stated preference (SP) data are usually used to collect information on all these variables to reveal the consumers' preferences including their VTTS and WTP (e.g., Hensher et al., 2005). While some argue that SP experiments undervalue the real world WTPs (e.g., Wardman, 2001) others found the opposite (Hensher, 2010). Only a small number of studies have so far combined revealed and stated preference data (Brownstone and Small, 2005; Ortúzar and Simonetti, 2008; Devarasetty et al., 2012). There seems to be agreement in the literature that RP is more appropriate to evaluate WTP for existing links while SP is more useful when evaluating hypothetical choice alternatives (such as the entry of a competitor or new product on certain routes) of existing or new links with significant changes in the levels of service and fares which are not observed in real markets. It is also important to specify how the term time is defined as VTTS can include or exclude waiting time, flight (in-vehicle) time, transfer time, access time etc. as shown by Johnson et al. (2014) who revealed that the WTP for reducing specifically access time is a function of income and flight time. While some of the often cited national transportation VTTS studies specifically exclude aviation (such as the studies in Sweden (e.g., Börjesson and Eliasson, 2014), Denmark (Fosgerau et al., 2010), and Switzerland, (e.g., Axhausen et al., 2008)) others such as the Netherlands include it at the inter-urban (>100 km) level (Kouwenhoven et al., 2014), and again others such as the UK (Wardman, 2004, 2014) and Norway (Ramjerdi et al., 1997) include it at both the inter-urban levels of less than 50 km and more than 50 km. Indicatively, Abrantes and Wardman (2011) show with their UK meta-analysis that air transport users have on average a VTTS value around 4.25 times larger than car users, and Shires and de Jong (2009) confirm, in line with the national VTTS studies, that aviation has on average much higher VTTS values than other modes of transport, particularly for business and long distance travel.

The transport literature usually distinguishes between leisure, commute and business travel (e.g., Fowkes, 2001). That notion is important as particularly for business travel there are alternative approaches to measure VTTS (such as cost saving approaches or the Hensher (1977, 2001) approach). In this paper we focus on the WTP approach as we are interested in the

[1] Australia provides excellent context to this question as despite the vast distances and large regional areas 89 per cent of the population live in urban centres (Source: World Bank).