

TFI Draft Note: Traffic Scenario Development Methodology for Airservices Australia

November 2023

Introduction

TFI prepared the Scenarios contained in its June 2023 Report and August 2023 Note for Airservices Australia, over April and May 2023 based on data from earlier in the year. TFI is to update the Scenarios, adding the actual FY23 outcome as a base, over the period December 2023 to January 2024.

Border closures due to COVID-19 created unprecedented impacts on aviation and other industries. As a result, conventional forecasting models were not appropriate to assess recovery and growth in the years following. TFI has chosen a three step approach to estimating scenarios for recovery and development.

1. The development of Scenarios that use the economic forecasts post-COVID but grow from FY19. These Scenarios 'exclude' COVID-19 impacts.
2. Development of an assumed recovery path from the COVID-19 impacted passenger levels to the levels in (1) above.
3. Comparison of forecasts produced using this method with benchmarks. These benchmarks include past history, recovery paths estimated by groups such as the International Air Transport Association (IATA), Airport Council International (ACI) and other travel industry bodies as well as Tourism Research Australia.

Two Scenarios were developed to represent possible levels for domestic and international passengers over FY24 to FY27. Although the range developed represented a most likely range, TFI considered it possible that other Scenarios could be constructed that fall outside this range. This could occur for example because of the impact of rising exchange rates on discretionary travel.

Development of Aviation Demand Scenarios

1.1 Estimation of econometric demand models

Multivariate regression with time series of selected explanatory variables is the common approach for modelling of airport demand. Where data permits, modelling of a cross section of comparable cities or destinations can often produce more robust estimates and reveal new intelligence.

Regression models were estimated to explain changes in passenger movements over time, for the following sectors:

- Seven domestic route types including SE Golden Triangle, Other Inter-capital, Interstate Leisure Routes, Other Interstate, Intrastate Mining Routes, Other Intrastate, Industry Non-Competitive.
- Residents returning to Australia by main country/country group visited - including NZ, UK/Europe, Mid East, SE Asia, China, NE Asia, India, Americas and Other.
- Visitor arrivals by country and country groups (same as resident groupings).
- Whilst aggregate national models also were developed, the groupings above were added to obtain the national forecasts.

Several economic drivers were tested in developing demand models:

- Gross domestic product (GDP) is considered the main income driver of demand as it determines the market's ability to afford air travel. Different GDP measures were used for the demand types: Australian GDP for domestic travel and Australian residents travelling overseas, while international GDPs for visitor arrivals (for specific countries or GDP OECD for certain groups).
- Trade weight index (TWI), as a proxy for exchange rates, can impact the relative cost for Australians to travel abroad and foreign residents to visit Australia and therefore is likely to impact the inbound / outbound mix of passengers.
- Trade (imports plus exports) share of Australian GDP.
- Hotel accommodation and travel costs as measured by ABS indices for domestic and international travellers.
- Air fares are the other cost indicator.

The models are structured in the log-linear form so that the estimated coefficients also represent the estimated demand elasticities for the corresponding drivers e.g. income or cost.

Table 1 provides the elasticities derived from the domestic models.

Table 1: Domestic Models for Route Types

Domestic Segment/ Route Group	Aust GDP	Discount Fares	TWI
SE Golden Triangle Routes	0.8	-0.1	
Other Inter-capital Routes	1.0	-0.3	
Interstate Leisure Routes	1.2	-0.6	
Other Interstate Routes	0.7	-0.6	
Intrastate Mining Routes (Mining Output)	1.4		2.2
Other Intrastate Routes	0.8	-0.4	
Industry Non-Competitive	0.6	-0.3	
Australia Total	0.8	-0.3	0.4

Source: BITRE data, TFI modelling & research

Separate models were initially estimated for each of the international market segments (e.g. country/country groups). Pooled estimation of these segments was also made using the system of equations technique. While both approaches delivered similar results, the latter was found to produce more significant consistent estimates for the international travel cost and TWI effects (i.e. cost elasticities were set to be equal across the equations via parameter restrictions).

Table 2 shows the elasticities derived from the international resident/visitor models.

Table 2: International Models for International Resident/Visitor Arrivals to Australia

Country/Region	Resident		Visitors	
	GDP Used	GDP Elasticity	GDP Used	GDP Elasticity
NZ	Australia	1.3	NZ	1.2
SE Asia	Australia	2.4	SE Asia	1.3
China	Australia	2.5	China	1.7
Other NE Asia	Australia	2.4	OECD	0.9
India	Australia	3.8	India	2.0
Americas	Australia	2.3	USA	1.1
UK	Australia	1.7	UK	2.2
Europe	Australia	1.7	Euro	1.9
Other	Australia	1.6	OECD	0.8
Australia	Australia	1.8	OECD	2.0
Other Variables				
CPI Travel		-0.4		-0.1
TWI		n.a.		-0.6
Trade Share		0.3		0.4

Source: ABS data, TFI modelling & research

Table 1.1 in **Attachment 1** provides the economic assumptions for the different markets.

1.2 Treatment of COVID Impacts/Recovery

TFI's approach for incorporating the effect of the COVID pandemic to 'normal' market demand in future years forecasts involves combining the following elements:

- The starting point included FY22 as the last full year actual data and monthly data to Feb-23 for ABS data.
- A review of current literature and market assessments was undertaken to estimate possible patterns of recovery for each travel market in the next few years. A recovery profile from the base to the Ex-COVID forecasts was constructed for each market grouping and varying for the two Scenarios:
 - For the domestic route groupings: Scenario 1 assumed a recovery to 100% of the Ex-COVID forecasts over most groups over two to three years. Scenario 2 assumed a recovery to 95% of the Ex-COVID forecasts over 2 years for the SE Golden Triangle and Leisure routes and 100% for other route groups.
 - For the international markets: Scenario 1 assumed 95% recovery and Scenario 2 90% recovery, to Ex-COVID forecasts over three to five years.

Table 2.1 in **Attachment 2** provides the aggregate Scenario outcomes for international residents, visitors and total.

Table 3.1 in **Attachment 3** provides the aggregate Scenario outcomes for domestic visitors.

Both **Tables 2.1** and **3.1** also includes the CAGR for several periods:

- FY09 to FY19
- FY14 to FY19
- FY19 to FY27 for the Ex-COVID and Post-COVID Scenarios.

Attachment 1: Economic Assumptions

Table 1.1 provides the specific economic assumptions used to drive the Scenarios.

Table 1.1: Economic Assumptions

	Annual Change in GDP (%)									Annual Change (%)		
	Aust.	NZ	SE Asia	China	India	USA	UK	Europe	OECD	Mining Output	TWI	Trade Share
FY 19	2.2%	2.9%	4.9%	6.0%	3.7%	2.3%	1.7%	2.0%	1.7%	4.7%	-4.7%	45%
FY 20	-0.1%	-2.1%	-3.4%	2.2%	-6.6%	-3.4%	-9.3%	-5.6%	-4.1%	4.3%	-4.8%	43%
FY 21	2.2%	5.6%	3.4%	8.1%	8.7%	5.7%	7.4%	5.4%	5.4%	-2.8%	6.9%	40%
FY 22	3.7%	2.3%	5.3%	3.2%	6.8%	1.6%	3.6%	3.2%	2.7%	-1.0%	-1.4%	40%
FY 23	3.3%	1.8%	5.0%	4.1%	6.4%	1.8%	1.9%	2.1%	1.7%	4.7%	-1.2%	43%
FY 24	1.5%	1.0%	4.6%	4.9%	6.1%	1.3%	0.4%	1.1%	1.1%	1.5%	0.0%	43%
FY 25	2.0%	1.6%	4.6%	4.3%	6.3%	1.4%	1.6%	1.6%	1.6%	1.5%	0.0%	44%
FY 26	2.0%	2.4%	4.6%	4.0%	6.1%	1.9%	2.1%	1.8%	1.7%	1.5%	0.0%	44%
FY 27	2.5%	2.5%	4.5%	3.8%	6.0%	2.1%	1.9%	1.6%	1.7%	1.5%	-0.8%	45%

Source: TFI based on IMF and other economic forecasters

Attachment 2: International Scenarios

Table 2.1 provides aggregated historic passenger levels along with the Scenario outcomes.

Table 2.1: International Resident and Visitor Scenarios

Years end 30 June	Residents (RR) '000s			Visitors (VA) '000s			Total '000s		
	History	S1	S2	History	S1	S2	History	S1	S2
FY09	5,858			5,516			11,374		
FY10	6,681			5,672			12,352		
FY11	7,424			5,900			13,325		
FY12	8,016			5,991			14,007		
FY13	8,401			6,293			14,695		
FY14	8,987			6,725			15,712		
FY15	9,263			7,139			16,401		
FY16	9,665			7,853			17,519		
FY17	10,297			8,558			18,855		
FY18	10,759			9,072			19,831		
FY19	11,232	11,232	11,232	9,344	9,344	9,344	20,576	20,576	20,576
FY20	8,559	11,139	10,712	6,737	9,097	9,073		20,236	19,785
FY21	224	11,478	10,630	151	9,090	9,044		20,568	19,674
FY22	1,591	12,478	11,149	1,192	9,549	9,480		22,028	20,629
Ex-COVID									
FY23		13,996	12,076		10,391	10,292		24,387	22,368
FY24		14,889	12,382		11,051	10,646		25,940	23,028
FY25		15,849	12,702		11,671	11,074		27,520	23,776
FY26		16,872	13,030		12,353	11,545		29,226	24,574
FY27		18,137	13,499		12,958	12,083		31,095	25,581
Post-COVID									
FY23		7,930	7,930		4,852	4,852		12,782	12,782
FY24		9,875	9,145		6,620	6,128		16,495	15,274
FY25		12,043	10,314		8,545	7,579		20,588	17,893
FY26		14,401	11,307		10,693	9,145		25,094	20,453
FY27		16,722	12,134		12,360	10,639		29,082	22,773
Post-COVID To Ex-COVID									
FY23		57%	66%		47%	47%		52%	57%
FY24		66%	74%		60%	58%		64%	66%
FY25		76%	81%		73%	68%		75%	75%
FY26		85%	87%		87%	79%		86%	83%
FY27		92%	90%		95%	88%		94%	89%
CAGR									
FY09 to FY19	6.7%			5.4%			6.1%		
FY14 to FY19	4.6%			6.8%			5.5%		
FY19 to FY27									
Ex-COVID		6.2%	2.3%		4.2%	3.3%		5.3%	2.8%
Post-COVID		5.1%	1.0%		3.6%	1.6%		4.4%	1.3%

Notes: RR= Resident Returns, VA = Visitor Arrivals. Source: TFI

Attachment 3: Domestic Scenarios

Table 3.1 provides aggregated historic passenger levels along with the Scenario outcomes.

Table 3.1: Domestic Passenger Scenarios

Years End 30 June	History ('000s Passengers)	S1 ('000s Passengers)	S2 ('000s Passengers)
FY09	50,239		
FY10	51,744		
FY11	54,733		
FY12	54,973		
FY13	57,101		
FY14	57,716		
FY15	57,267		
FY16	58,466		
FY17	59,326		
FY18	60,780		
FY19	60,982	60,982	60,982
FY20	46,788	61,059	59,992
FY21	22,714	62,531	60,389
FY22	29,960	64,757	61,481
Ex-COVID			
FY23		66,814	62,356
FY24		69,085	63,379
FY25		71,383	64,371
FY26		73,569	65,208
FY27		75,852	66,081
Post-COVID			
FY23		53,538	53,538
FY24		60,827	58,782
FY25		68,552	62,741
FY26		73,162	64,174
FY27		76,223	65,656
Post-COVID To Ex-COVID			
FY23		80.1%	85.9%
FY24		88.0%	92.7%
FY25		96.0%	97.5%
FY26		99.4%	98.4%
FY27		100.5%	99.4%
CAGR			
FY09 to FY19	2.0%		
FY14 to FY19	1.1%		
FY19 to FY27			
Ex-COVID		2.8%	1.0%
Post-COVID		2.8%	0.9%

Source: TFI

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