



**Economic contribution of Sydney
Airport**

April 2018

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Glossary

Acronym	Full name
ABS	Australian Bureau of Statistics
AFP	Australian Federal Police
ASIC	Aviation Security Identity Cards
BITRE	Bureau of Infrastructure, Transport and Regional Economics
CAGR	Compound Annual Growth Rate
FTE	Full Time Equivalent
GDP	Gross Domestic Product
GSP	Gross State Product
NSW	New South Wales
SACL	Sydney Airport Corporation Limited
The Airport	Sydney Airport
TRA	Tourism Research Australia

Key findings

Sydney Airport is a cornerstone of Australia's commercial aviation industry: in 2017, it hosted more than 43.3 million passenger movements – around a quarter of the nation's total – and hosted 338,500 aircraft movements and exported 188,400 tonnes of international airfreight.

Activity levels (both landside and airside) at Sydney Airport have grown since 2014, when the last economic contribution assessment was undertaken. Growth in facilitated trade (freight and tourism) has been stronger than growth in the precinct. This reflects relatively higher growth in international movements over the period and a sizable increase in the value of goods exported from Sydney Airport.

Total Contribution of Sydney Airport

The total economic contribution of the Sydney Airport precinct in 2017 – the precinct's economic contribution encompassing both the direct and indirect contribution – can be summarised as follows:

- The activities of businesses operating on the Sydney Airport precinct contributed an estimated **\$10.7 billion in value added, with associated employment of 57,400 full time equivalent (FTE) jobs**; this represents 6.5% and 8.5% growth, respectively, since 2014.
- The contribution of tourism and freight facilitated by the airport is equivalent to a further **\$27.3 billion in value added and generated an estimated 281,200 FTE jobs**; this represents 32.5% and 10.8% growth, respectively, since 2014.
 - This remarkable growth is driven by a range of factors, including:
 - a 21% increase in the value of freight exports through Sydney (BITRE 2018), reflecting both the changing profile of export goods to higher value products, and heightened demand due, in large part, to the falling Australian dollar between 2014 and 2017;
 - a 21% increase in international passengers (SACL 2018). This comes despite a period of global economic and political uncertainty, and steadily increasing oil prices. Indeed, growth in inbound tourism expenditure over the period was observed to track well above average economic performance.

In aggregate, in 2017, the activities of the Sydney Airport precinct generated or facilitated a total of **\$38.0 billion in value added and 338,500 FTE jobs**.

Relative to the economy more broadly, this represents **2.2% of Australia's Gross Domestic Product (GDP)** and, noting that some of this activity occurs outside of New South Wales (NSW), this is 'equivalent to' 6.8% of NSW's Gross State Product (GSP).

The contribution of additional activity

When the generated and facilitated economic contribution estimates are combined with air traffic and passenger data (BITRE 2018 and TRA 2018), it is estimated that:

- A typical daily international service contributed \$122 million in value added and generated an estimated 1,300 FTE jobs in New South Wales in 2017.
- Comparatively, an A380 aircraft daily service from China contributed \$470 million in State value added and generated an estimated 5,200 FTE jobs in 2017. Services from China bring in notably more value added per flight, due to high load factors (greater capacity utilisation) and above average visitor spending per passenger
- Likewise, an A380 aircraft daily service from Malaysia contributed \$260 million in State value added and generated an estimated 2,750 FTE jobs in 2017.

Contribution to household income and employment

- The activities of the Sydney Airport precinct **directly generated or facilitated \$10.9 billion in household income**, rising to a total of \$19.9 billion when including indirect contributions¹.
- Direct and indirect employment associated with the activity of businesses operating on the Sydney Airport precinct is equivalent to 1.7% of total FTE employment in NSW.
- Total employment generated or facilitated by Sydney Airport represents 3.2% of total Australian employment (and, noting that some of this employment occurs outside the state, is equivalent to 10.1% of NSW FTE employment).

Sydney Airport's economic contribution summary, 2014 to 2017

Table 1.1 Economic contribution summary, 2014-2017

Measure	2014	2017	Description
Direct precinct value added	\$5.6b	\$6.2b	Sydney Airport precinct value added has increased by \$600m since 2014
Direct precinct employment	29,100	30,900	Precinct employment has increased 6.2% since 2014
Total value added	\$30.8b	\$38.0b	The value added generated or facilitated by Sydney Airport is equivalent to 6.8% of NSW GSP
Total employment	306,700	338,500	The number of FTE jobs directly or indirectly generated or facilitated by Sydney Airport is equivalent to 10.1% of NSW employment
Household income	\$14.7b	\$19.9b	The total economic activity generated or facilitated by Sydney Airport contributes \$19.9 billion to household incomes
Wages	\$87,900	\$85,400	The average FTE wage of an employee working on the Sydney Airport precinct is around 12% higher than the NSW average. The fall in wages may be due to a trend in casualisation in the airport precinct, with technology upgrades in certain sectors meaning staff can be replaced with lower skilled workers. It also reflects relatively stagnant wage growth in the wider economy seen over the period.

Sydney Airport's economic contribution in 2039

Growth in the airport's economic contribution over coming years will be shaped by a number of factors, including air traffic and passenger volume growth, productivity and airport development. Forward-looking modelling – taking account these factors – finds that:

- The airport precinct's direct economic contribution will increase from \$6.2 billion in 2017 to \$7.4 billion by 2024, then to \$9.1 billion by 2039 in real terms (2017 \$).
- When the indirect impacts are taken into account, the total economic contribution of the airport precinct is projected to grow from \$10.7 billion in 2017 to \$12.8 billion by 2024, then to \$15.5 billion by 2039 in real terms.
- In terms of employment, direct FTE jobs will grow from 30,900 in 2017 to 36,200 in 2024, before declining marginally to 35,700 in 2039 (this decline is driven a predicted move to bigger more efficient planes). Total attributable FTE jobs will grow from 57,400 in 2017 to 63,700 in 2024, to 71,000 in 2039.

¹ Note that household income is a component of value added; hence these figures cannot be combined.

Looking at the broader contribution of the airport, included facilitated contributions, the value of economic activity generated or facilitated by the airport is projected to increase in real terms from \$38.0 billion in 2017 to an estimated \$45.8 billion in 2024 and \$52.6 billion in 2039.

At the same time, total employment is projected to grow to 379,100 FTE by 2024 and 414,000 FTE by 2039. Most of this growth will be driven by increased facilitated tourism.

Deloitte Access Economics

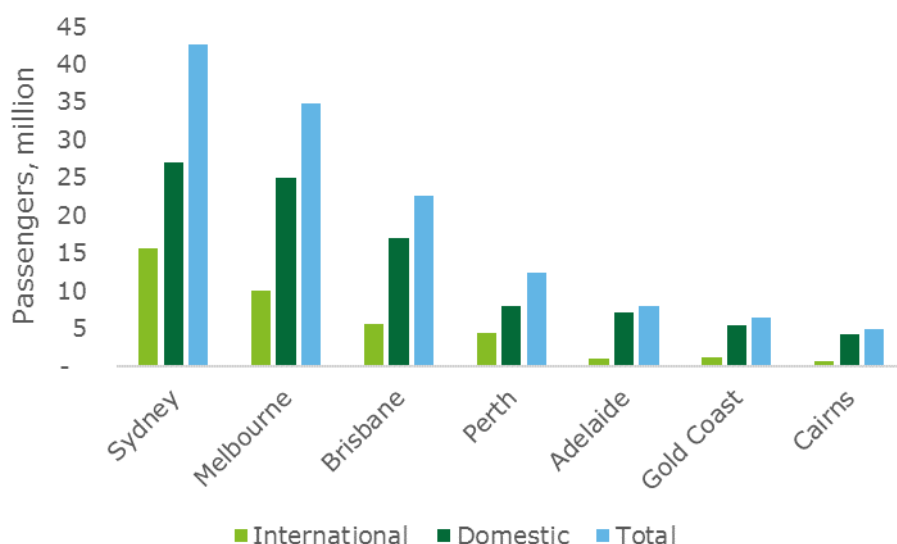
1 Introduction

This report presents estimates of the economic contribution of Sydney Airport (the Airport) to the Australian economy, for the 2017 calendar year. The study is an update to the 2015 Deloitte Access Economics economic analysis for Sydney Airport Corporation Limited (SACL), *The economic value of Sydney Airport, 2014*. The contents of the report will be used by SACL to provide the economic content for the Airport's 2039 Master Plan and to facilitate continued promotion of the Airport's economic significance to its various stakeholders.

1.1 The economic role of Sydney Airport

Sydney Airport is central to Australia's commercial aviation industry and economic prosperity. The airport is Australia's largest and busiest, moving more domestic and international passengers than any other airport in Australia (Chart 1.1).

Chart 1.1 Passenger movements in Australia's busiest airports, 2017



Source: BITRE aviation statistics, 2018

The economic activity generated at the airport precinct

The most prominent on-airport operations are the domestic and international passenger airlines' activities including catering, baggage handling, maintenance, and refuelling. Yet the majority of businesses generating economic activity at Sydney Airport are not immediately involved in regular passenger transport aviation, including:

- onsite retail, such as newsagencies, clothing and duty-free stores;
- precinct hospitality, including accommodation and on-site F&B options;
- ground transport, including terminal shuttle buses and taxi services;
- security and other government services, including customs, AFP and security contractors;
- dedicated freight and logistics business; and
- other corporate/office-based businesses

All these activities are captured in the contribution study as part of the Sydney Airport precinct – a consistent approach to the 2012 and 2014 studies.

Tourism and trade flows through the airport

In 2017, Sydney facilitated over 7.9 million arriving international passenger movements, around 60% of which were overseas visitors to Australia. These visitors spend money during their stay, and this tourism 'service', while consumed in Australia, is an export for the Australian economy. In 2017, international Sydney Airport users collectively spent \$13.2 billion on trips to Australia.

In 2017, 188,400 tonnes of goods were exported from Sydney Airport, valued at \$17.6 billion. While these export goods were generally not produced within the precinct, the airport plays a critical role in facilitating the delivery of goods to overseas markets. Also, while not captured in the national accounts as measured by the Australian Bureau of Statistics (ABS), the goods imported via Sydney Airport create considerable consumer surplus for Australians. Some imported goods also serve as important intermediate inputs for production by Australian businesses.

Broader social contribution of Sydney Airport

As a geographically isolated country, air connectivity is important to Australia, along with a number of broader socio-economic dimensions: it connects friends and family, and strengthens business and community linkages. Sydney Airport has a special role in connecting remote and regional areas to the opportunities found in a major capital city. For instance, in many remote regional areas, air travel is the only practical means of accessing vital emergency services such as the Royal Flying Doctor Service (which has a Sydney Airport base). While these aspects of Sydney Airport's contribution are not quantified here, these represent a considerable value to the Australian community.

1.2 Overview of approach to this study

Economic contribution studies provide a snapshot of the contribution of a firm or industry (in this case Sydney Airport) at a particular point in time. The analysis uses common financial measures, such as revenue, cost of goods sold, wages and precinct employment to estimate the Airport's contribution to the Australian economy. This approach is based on the income approach to determining Gross Domestic Product, utilising the *returns* to capital through Gross Operating Surplus, and the *returns* to labour through wages. That is, the approach estimates the total income generated, net of costs, through the activities associated on and with the Airport.

This approach is consistent with the framework used by the Australian Bureau of Statistics (ABS) in compiling the *Australian National Accounts*. In addition to the direct contribution associated with Airport and precinct operations, the demand for upstream inputs and further interlinkages with other sectors of the economy are modelled using ABS supply-use (or input-output) tables.

The contribution findings were estimated using a range of data sources, including:

- SACL internal profit and loss, and personnel data for the 2017 calendar year;
- SACL internal data on passenger and airline traffic movements from 2014 to 2017, and forecasts to 2039;
- 2012 Deloitte Access Economics survey data of businesses operating within the Sydney Airport precinct²;
- ABS Input-Output tables and Tourism Satellite Account, 2015-16;
- aviation statistics and airfreight data from BITRE; and
- domestic and international visitor survey data from Tourism Research Australia (TRA), year to September 2017.

Furthermore, a series of consultations with major employers was used to understand onsite economic activity beyond the headline statistics. Deloitte Access Economics consulted with 10 major precinct businesses, including

² 2012 survey data of precinct businesses has consistently been used as the foundation of on-site business profiling for both the 2014 and 2017 updates. While this approach is reasonable, a survey to update this base level data should be considered for upcoming updates.

airlines, airline services companies, security companies and retail firms. The consulted companies collectively accounted for over 40% of active Aviation Security Identity Cards (ASIC) on issue.

This update uses a dual approach to determine the economic activity *generated* by the Sydney Airport precinct, and the activity *facilitated* through tourism and freight: (1) The reported 2014 results of value added and employment for each type of precinct business were combined with observed growth in aviation activity, between 2014 and 2017 and modelled changes in economic structure (i.e. updated input-output tables and consultation findings), to derive the 2017 contribution estimates; and (2) Latest data was sourced regarding aggregate tourism expenditure and export freight value that passed through Sydney Airport, based on TRA, BITRE and ABS information.

While the approach taken is consistent with past analyses, there are a variety of areas where, not only the airport and tourism activity data, but also the data on broader economic linkages and relationships will have changed. Further details on the data and methodology can be found in the attached Appendices.

2 Economic contribution of Sydney Airport

As the discussion in the previous chapter outlines, the economic contribution of a major piece of infrastructure such as Sydney Airport takes a variety of forms. In broad terms, these include the economic activity of enterprises operating on the airport precinct and the economic activity generated by the tourism and trade flows the airport facilitates.

2.1 Economic contribution Sydney Airport precinct

Sydney Airport is a cornerstone of Australia's commercial aviation industry: in 2017 it hosted more than 43 million passenger movements – 28% of the nation's total – 338,500 aircraft movements and 188,400 tonnes of airfreight.

Passenger levels at Sydney Airport have grown significantly since 2014, when the last economic contribution assessment was undertaken, rising 12.5% over the period. Aircraft movements have grown at a slower pace, rising 3.5% over the period. This reflects the higher rate of international traffic demand (which typically use larger aircraft) as well as general up-gauging of aircraft to accommodate demand

Direct contribution

In 2017 the Sydney airport precinct directly generated **\$6.2 billion in value added, employing around 30,900 FTE employees**. The Airport precinct hosts an array of businesses, including SACL operations and aviation-related enterprises, as well as wider retail, commercial, Government and hospitality activity that modern capital city airports support.

Table 2.1 provides a detailed breakdown of precinct employment by sector. As expected, the majority of workers in the precinct are employed in the transport and storage industry. Just over 60% of direct employment is within this industry, which includes the airlines, taxis, and transport support services³. The other major industries of employment are construction (8% of direct employment) and government services, such as Customs and border protection (7% of employment).

Table 2.1 Major areas of employment in Sydney Airport

Area	Employment proportion
Transport and storage	63%
Construction	8%
Retail, cafés and accommodation	9%
Government services	7%
Property and business services	5%
Maintenance, cleaning & engineering services	2%

³ More specifically, transport and storage covers all: road transport; rail transport; water, pipeline and other transport; air and space transport; postal and courier pick-up and delivery service; and transport support services and storage workers.

Source: Deloitte Access Economics 2018.

Indirect contribution

Through the purchase of inputs, Sydney Airport contributes to employment and economic activity outside its precinct. For example, a food and beverage outlet will use wholesale food, electricity, and water in their food preparation process, plus technical services for their equipment maintenance, and financial services for bookkeeping. This upstream demand for goods and services contributes to jobs and growth in the broader national economy, resulting in an indirect contribution.

In 2017 the Sydney Airport precinct indirectly contributed **\$4.5 billion to national value added**. This was associated with approximately **26,500 FTE jobs** across the economy. The indirect component makes up 42% of the Airport's total contribution, reflecting the value of economic activity that Sydney Airport helps support through its linkages with other sectors of the economy⁴.

The Sydney Airport precinct contributed a total of **\$10.7b in value added** and supported **57,400 FTE jobs**. This is equivalent to around 1.7% FTE employment in NSW.

2.2 Facilitated tourism and trade

Facilitated tourism expenditure

Australia's tourism industry is heavily reliant on the aviation sector and, in particular, on Sydney Airport as an international and domestic gateway. An estimated 38% of Australia's 8.6 million international visitors in 2017 arrived via Sydney, with the number of international visitors to Australia up significantly by 8.9% per annum since 2014.

International visitors arriving and/or departing from Sydney Airport spent around 125 million nights in Australia in 2017, representing a significant increase from 2014. At the same time, the average nightly spend by international visitors, excluding airfares, declined slightly to \$89 per night (from \$92 per night in 2014). When expenditure in other states and territories by visitors who use Sydney Airport is taken into account, international tourism expenditure facilitated by the airport in 2017 is estimated at \$13.2 billion.

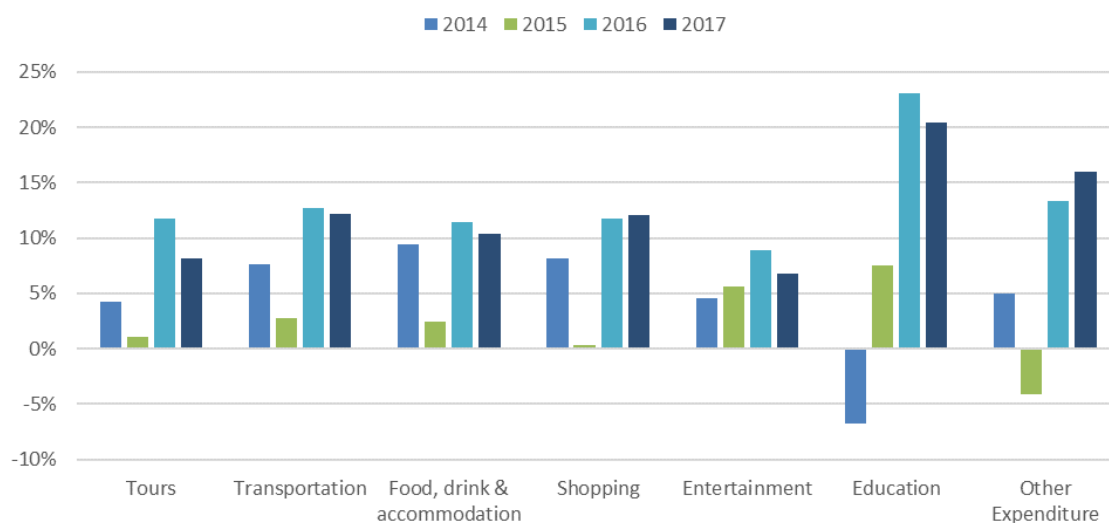
The estimated proportion of domestic interstate visitors to NSW arriving by air (53%) and their associated visitor nights (14.8 million) in 2017 both increased marginally from 2014. However, their modelled average nightly spend decline from \$175 in 2014 to \$145 in 2017⁵. Consequently, expenditure from interstate visitors who utilise air travel as their basis for visiting NSW – the vast majority of whom arrive or depart via Sydney Airport – has remained stable at \$2.2 billion in NSW in 2017.

Accommodation, education and retail trade are the top three categories for visitors' expenditure, collectively accounting for 43% of the total expenditure. Expenditure on education, in particular, has grown by over 20% p.a. in the past three years. Growth of such magnitude has not been witnessed since 2008. Expenditure on other items such as tours, transportation, food and shopping have also witnessed double-digit growth during the period. Chart 2.1 shows the annual growth rate of visitor expenditure by item for international visitors arriving and departing at the Airport.

⁴ The latest available input-output tables were used to estimate the indirect contribution of the airport precinct. Nevertheless, the relative indirect to direct contribution remains broadly similar to the previous studies.

⁵ The primary driver of this difference is a methodological change, whereby the cost of the airline ticket was deducted from the 2017 tourism expenditure to avoid double counting with precinct contribution. The most recent, unadjusted tourism data, shows that nightly spend of the domestic interstate travel segment in NSW was actually relatively stable between 2014 and 2017, moving from \$182 to \$185 per night.

Chart 2.1 Annual growth in itemised tourism expenditure for international visitors arriving and departing at Sydney Airport, 2014-17



Source: TRA 2018, Deloitte Access Economics 2018.

Facilitated tourism contribution

Tourism activity facilitated by Sydney Airport contributed **\$7.5 billion in direct value added** and supported **86,400 direct FTE jobs** in Australia. Combined with the indirect contribution to upstream suppliers, it is estimated that tourism facilitated by Sydney Airport contributed **\$13.9 billion to national value added**, and supported **159,900 FTE jobs**.

The latest State Tourism Satellite Account (STSA) 2015-16 (TRA, 2017) noted the significant labour productivity improvements (lower FTE for each dollar of value added) across the tourism sector – reflective of economy wide efficiency gains. The detailed input-output multipliers also revealed higher import shares for indirect supply (therefore lowering potential indirect value added growth) and tightening retail margins (thus lower growth in gross value added than expenditure).

Facilitated freight

Sydney Airport is the largest airfreight port in Australia, accounting for over half of all airfreight value in Australia, and acting as a major exporter of professional, scientific and controlling instruments, telecommunications equipment and edible products – along with a wide variety of other goods.

The international export of goods by airfreight generates revenue, value added and employment across Australia. In 2017 Sydney Airport facilitated over \$17.6 billion in export revenue. This contributed to **\$6.9 billion in direct value added** to the economy. The purchase of inputs required to manufacture these exports, resulted in a further **\$6.5 billion in indirect value added** embedded in the export supply chains.

Airfreight export revenue has grown 21% since 2014. Over the same period tonnage exported increased significantly from 130,800 to 188,400. Total freight moved including imports, however declined marginally from 408,000 tonnes to 400,000 tonnes, due to falling imports. Among the most significant export items were professional, scientific and controlling instruments; office machines and telecommunication equipment; medicinal and pharmaceutical products; and transport equipment (excluding road vehicles).

2.3 Summary of economic contribution

In 2017, the economic contribution of Sydney Airport and the economic activity it facilitates can be summarised as follows:

- The Sydney Airport precinct directly contributed an estimated **\$6.2 billion in value added** to the economy. Combined with the indirect contribution for intermediate inputs, the **total contribution is \$10.7 billion**
- Associated with the total economic contribution of the Sydney Airport precinct is employment of **57,400 FTE** – equivalent to 1.7% of total employment in NSW in 2017
- The international tourism and trade exports facilitated by the Airport contributed an estimated \$14.4 billion of value added to the Australian economy directly, and **\$27.3 billion in total**.

In aggregate, the total economic activity generated or facilitated by Sydney Airport in 2017 contributed **\$38.0 billion in value added** to the Australian economy, with associated employment of **338,500 FTE jobs**. This is equivalent to 2.2% of Gross Domestic Product (GDP) and 3.2% of total FTE employment.

Table 2.2 Economic contribution of Sydney Airport to the national Economy, 2014 and 2017

Metric	2014 contribution (2014 \$)			2017 contribution		
	Direct	Indirect	Total	Direct	Indirect	Total
Generated contribution (direct precinct activity)						
Value added (\$b)	\$5.6	\$4.4	\$10.0	\$6.2	\$4.5	\$10.7
Employment (FTE)	29,100	23,800	52,900	30,900	26,500	57,400
Facilitated contribution (resulting from tourism and freight)						
Value added (\$b)	\$11.6	\$9.2	\$20.8	\$14.4	\$12.9	\$27.3
Employment (FTE)	141,600	112,200	253,800	173,100	108,000	281,200
Generated and facilitated contribution						
Value added (\$b)	\$17.2	\$13.6	\$30.8	\$20.6	\$17.4	\$38.0
Employment (FTE)	170,700	135,900	306,700	204,000	134,500	338,500

Source: Deloitte Access Economics 2018.

Table 2.3, below, provides a breakdown of the nominal growth in contribution between the three reporting years – 2011 to 2014, and 2014 to 2017. There is overall higher growth for the precinct and facilitated contribution over the latter period, reflecting stronger passenger growth and operational efficiencies during this time.

Table 2.3 Comparison of growth in Sydney Airport economic contribution, 2011 to 2014 versus 2014 to 2017

	Precinct contribution and facilitated tourism and freight (CAGR*)	
	2011 - 14	2014 - 17
Direct Value Added	3.8%	6.2%
Indirect Value Added	3.6%	8.5%
Direct FTE	2.6%	6.1%
Indirect FTE	2.7%	-0.4%
Total Value Added	3.7%	7.3%

Total FTE	2.6%	3.3%
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Source: Deloitte Access Economics 2018. Note: *Compound Annual Growth Rate

2.4 Economic contribution per passenger/flight

When the economic contribution estimates are combined with air traffic and passenger volumes, it is estimated that:

- A typical daily international service contributed \$122 million in value added and generated an estimated 1,300 FTE jobs in New South Wales in 2017.
- Comparatively, the higher yielding China source market revealed an A380 aircraft daily service from China contributed \$470 million in State value added and generated an estimated 5,200 FTE jobs in 2017.
- Likewise, an A380 aircraft daily service from Malaysia contributed \$260 million in State value added and generated an estimated 2,750 FTE jobs in 2017.

The 2017 annual economic contribution, from a sample of daily services and aircraft is included in the table below. It is worth noting that the contribution per aircraft is notably large for China, due to high load factors, higher share of international visitors and above average visitor spending per passenger.

Table 2.4: Annual economic contribution per additional service

Service	GDP (\$ million)	FTE Jobs
International (average)		
A380	211	2,210
Typical	122	1,300
China		
A380	470	5,180
Typical	256	2,800
Malaysia		
A380	260	2,750
Typical	174	1,800

Source: Deloitte Access Economics 2018.

3 The future contribution of Sydney Airport

The future contribution of Sydney Airport can be projected based on forecasts of aviation activity. This methodology assigns different rates of aviation growth, namely passenger movements or aircraft movements, to different components of airport activity. The approach is applied to both generated precinct activity and facilitated off-site activity.

To forecast the growth in value added to 2024 and 2039:

- The precinct is expected to grow based on forecasts for passenger and airline movements, with different weighted growth rates depending on their business type. For instance, retail will likely grow in proportion to passenger movements, while ground handling will grow in proportion to airline movements.
- Facilitated international tourism expenditure is expected to grow in proportion to projected international passenger movements.
- Freight is expected to grow in line with projected airfreight movements.

As noted throughout this report, FTE employment has not risen as quickly as gross value added due to economy wide labour productivity improvements. To account for this, a productivity factor was estimated using the historical relationship between FTE growth and value added growth in the economy and it was assumed this relationship will continue into the future. The labour productivity factor was applied to facilitated employment and employment in the wider supply chain.

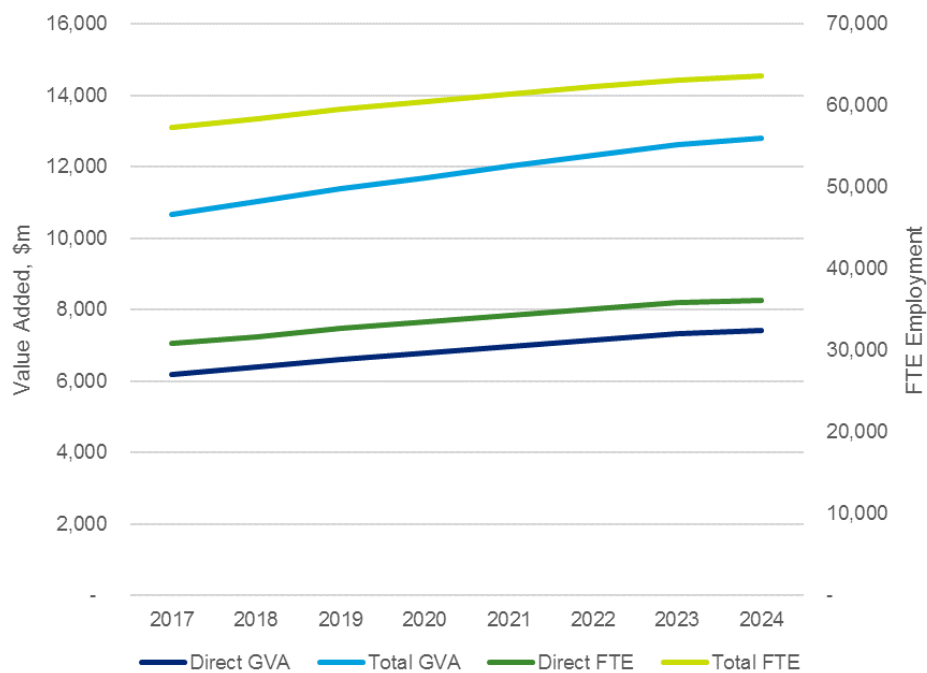
With respect to transport-related activity at the precinct, it was assumed that Gross Operating Surplus (GOS – a measure of profit) will increase at the rate of passenger movements, while wages and employment will increase at the rate of airline movements. This in effect assumes that value added will rise faster than wages of employment due to productivity improvements from larger aircraft.

In this way, different components of airport operations are forecast to grow at different rates, dependent on the forecast rate of activity growth and productivity improvements.

Using this method of assigning relevant growth rates to components of the airport activity gives the following projections for the Sydney Airport precinct (Chart 3.1):

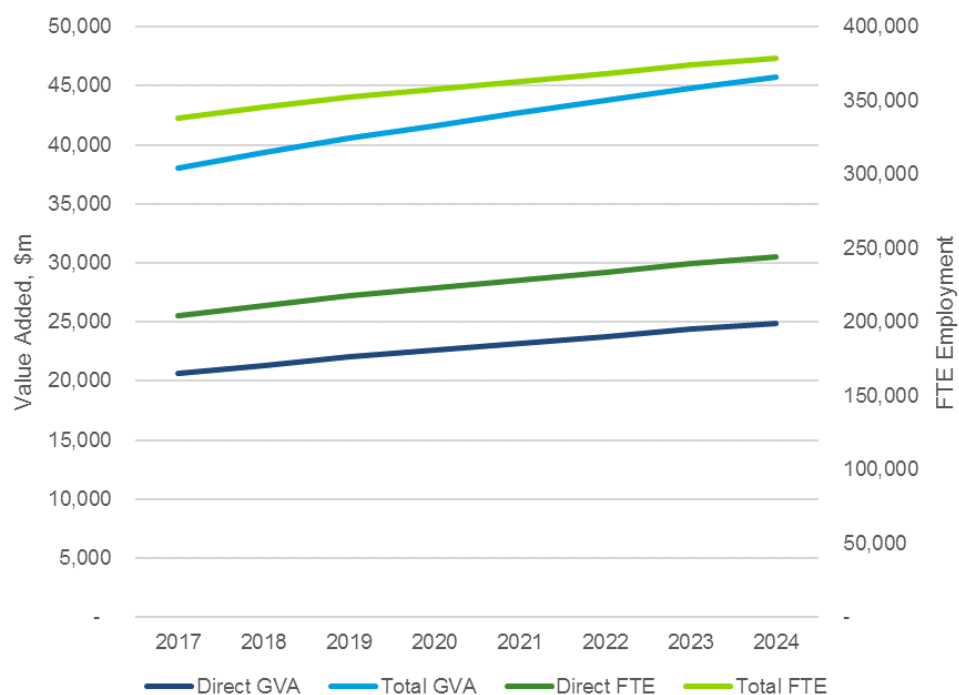
- The airport precinct's direct economic contribution will increase from \$6.2 billion in 2017 to \$7.4 billion by 2024, then to \$9.1 billion by 2039 in real terms (2017 \$).
- When the indirect impacts are taken into account, the total economic contribution of the airport precinct is projected to grow from \$10.7 billion in 2017 to \$12.8 billion by 2024, then to \$15.5 billion by 2039 in real terms.
- In terms of employment, direct FTE jobs will grow from 30,900 in 2017 to 36,200 in 2024, before declining marginally to 35,700 in 2039 (this decline is driven aircraft movements over the period, due to bigger more efficient planes). Total attributable FTE jobs will grow from 57,400 in 2017 to 63,700 in 2024, to 71,000 in 2039.

Chart 3.1 Projected airport precinct economic contribution from 2017 to 2024



The value of economic activity generated (at the precinct) or facilitated (by freight or tourism) by the airport is projected to increase in real terms from \$38.0 billion in 2017 to an estimated \$45.8 billion in 2024 and \$52.6 billion in 2039 (Chart 3.2). At the same time, total employment is projected to grow to 379,100 FTE by 2024 and 414,000 FTE by 2039. Most of this growth will be driven by increased facilitated tourism.

Chart 3.2 Projected total economic contribution, both facilitated and generated, from 2017 to 2024



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- *National Visitor Survey*, TRA Online

Appendix A : Comparison table

Table A.1 Economic contribution summary, 2014-2017

Measure	2014	2017
Precinct		
Direct value added	\$5.6b	\$6.2b
Indirect value added	\$4.4b	\$4.5b
Total value added	\$10.0b	\$10.7b
Direct FTE employment	29,100	30,900
Indirect FTE employment	23,800	26,500
Total FTE employment	52,900	57,400
Average wages	87,900	85,400
Facilitated tourism and freight		
Direct value added	\$11.6b	\$14.4b
Indirect value added	\$9.2b	\$12.9b
Total value added	\$20.8b	\$27.3b
Direct FTE employment	141,600	173,100
Indirect FTE employment	112,200	108,000
Total FTE employment	253,800	281,200
International visitor nights	66m	125m
Domestic visitor nights	12m	15m
Average international visitor spend per night	\$92	\$89
Average domestic visitor spend per night	\$175	\$145
Total generated and facilitated		
Direct value added	\$17.2b	\$20.6b
Indirect value added	\$13.6b	\$17.4b
Total value added	\$30.8b	\$38.0b
Direct FTE employment	170,700	204,000
Indirect FTE employment	136,000	134,500
Total FTE employment	306,700	338,500
Daily service		
A typical daily international service value added	\$120m	\$122m
A typical daily international service FTE employment	1,400	1,300
A380 aircraft daily service from China value added	\$451m	\$470m
A380 aircraft daily service from China FTE employment	5,260	5,180

Appendix B : Forecast tables

Table B.1 Direct and total economic contribution of the airport precinct from 2017 to 2024

	Direct FTE	Total FTE	Direct GVA (\$m)	Total GVA (\$m)
2017	30,900	57,400	6,200	10,700
2018	31,700	58,400	6,400	11,000
2019	32,700	59,500	6,600	11,400
2020	33,500	60,400	6,800	11,700
2021	34,300	61,400	7,000	12,000
2022	35,100	62,300	7,200	12,300
2023	35,800	63,200	7,300	12,600
2024	36,200	63,700	7,400	12,800

Table B.2 Direct and total generated (airport precinct) and facilitated (freight and tourism) economic contribution from 2017 to 2024

	Direct FTE	Total FTE	Direct GVA (\$m)	Total GVA (\$m)
2017	204,000	338,500	20,600	38,000
2018	211,100	345,700	21,400	39,300
2019	217,500	352,100	22,000	40,600
2020	223,000	357,600	22,600	41,700
2021	228,500	363,100	23,200	42,700
2022	234,000	368,600	23,800	43,800
2023	239,400	374,000	24,400	44,800
2024	244,500	379,100	24,900	45,800

Appendix C : Economic contribution approach

Economic contribution studies are intended to quantify measures such as value added, exports, imports and employment associated with a given industry or firm, in a historical reference year. The economic contribution is a measure of the value of production by a firm or industry.

All direct, indirect and total contributions are reported as gross operating surplus (GOS), labour income, value added and employment (with these terms defined in Table C.1).

Table C.1: Definitions of economic contribution estimates

Estimate	Definition
Gross operating surplus (GOS)	GOS represents the value of income generated by the entity's direct capital inputs, generally measured as the earnings before interest, tax, depreciation, and amortisation (EBITDA).
Labour income	Labour income is a subcomponent of value add. It represents the value of output generated by the entity's direct labour inputs, as measured by the income to labour.
Value added	Value added measures the value of output (i.e. goods and services) generated by the entity's factors of production (i.e. labour and capital) as measured in the income to those factors of production. The sum of value added across all entities in the economy equals gross domestic product. Given the relationship to GDP, the value added measure can be thought of as the increased contribution to welfare.
Employment (FTE)	Employment is a fundamentally different measure of activity to those above. It measures the number of workers (measured in full-time equivalent terms) that are employed by the entity, rather than the value of the workers' output.
Direct economic contribution	The direct economic contribution is a representation of the flow from labour and capital committed in the economic activity.
Indirect economic contribution	The indirect contribution is a measure of the demand for goods and services produced in other sectors as a result of demand generated by economic activity.
Total economic contribution	The total economic contribution to the economy is the sum of the direct and indirect economic contributions.

Source: Deloitte Access Economics (2017)

Definitional notes

When calculating the GOS for a typical for-profit firm or industry, income streams from government (such as transfers or production subsidies) are excluded as they are a transfer of public funds, not reflective of income generated by the activities of the firm or industry.

Similarly, value added is typically calculated as GOS plus labour income net of subsidies; under the ABS Australian System of National Accounts (ASNA) (ABS 2013):

A subsidy on a product is a subsidy payable per unit of a good or service. An enterprise may regard a subsidy as little different from sales proceeds. However, in the national accounts, subsidies are regarded as transfer payments from general government, enabling enterprises to sell their output for less than would otherwise be the case.

Value added

The measures of economic activity provided by this contribution study are consistent with those provided by the Australian Bureau of Statistics. For example, value added is the contribution the sector makes to total factor income and gross domestic product (GDP).

There are a number of ways to measure GDP, including:

- **expenditure approach** – measures expenditure: of households, on investment, government and net exports; and
- **income approach** – measures the income in an economy by measuring the payments of wages and profits to workers and owners.

Below is a discussion measuring the value added by an industry using the income approach.

Measuring the economic contribution – income approach

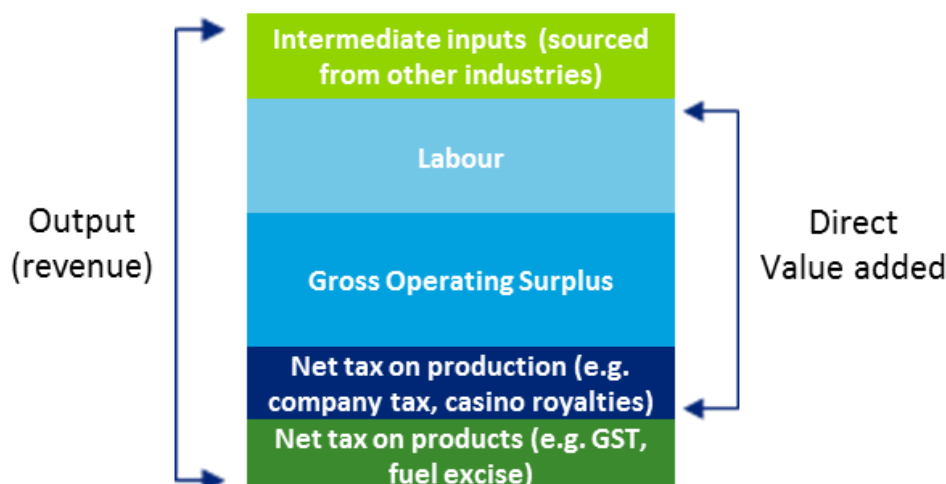
There are several commonly used measures of economic activity, each of which describes a different aspect of an industry's economic contribution:

- **Value added** measures the value of output (i.e. goods and services) generated by the entity's factors of production (i.e. labour and capital) as measured in the income to those factors of production. The sum of value added across all entities in the economy equals gross domestic product. Given the relationship to GDP, the value added measure can be thought of as the increased contribution to welfare. Value added is the sum of:
 - Gross operating surplus (GOS) represents the value of income generated by the entity's capital inputs, generally measured as the earnings before interest, tax, depreciation and amortisation (EBITDA).
 - Tax on production less subsidy provided for production. Note: given the manner in which returns to capital before tax are calculated, company tax is not included or this would double-count that tax. In addition, it excludes goods and services tax, which is a tax on consumption (i.e. levied on households).
 - Labour income is a subcomponent of value added. It represents the value of output generated by the entity's direct labour inputs, as measured by the income to labour.

Figure C.1 shows the accounting framework used to evaluate economic activity, along with the components that make up *output*. Output is the sum of value added and the value of intermediate inputs used by the firm or industry.

The value of intermediate inputs can also be calculated directly by summing up expenses related to non-primary factor inputs.

Figure C.1: Economic activity accounting framework



Source: Deloitte Access Economics (2017)

Contribution studies generally outline employment generated by a sector. Employment is a fundamentally different measure of activity to those above. It measures the number of workers that are employed by the entity, rather than the value of the workers' output.

Direct and indirect contributions

The **direct** economic contribution is a representation of the flow of labour and capital in the airport.

The **indirect** contribution is a measure of the demand for goods and services produced in other sectors as a result of demand generated by the direct economic activity of the airport. Estimation of the indirect economic contribution is undertaken in an input-output (IO) framework using Australian Bureau of Statistics IO tables which report the inputs and outputs of specific sectors of the economy (ABS 2013).

The total economic contribution to the economy is the sum of the direct and indirect economic contributions.

Other measures, such as total revenue or total exports are useful measures of economic activity, but these measures alone cannot account for the contribution made to GDP. Such measures overstate the contribution to value added because they include activity by external firms supplying inputs. In addition, they do not discount the inputs supplied from outside Australia.

Limitations of economic contribution studies

While describing the geographic origin of production inputs may be a guide to a firm or industry's linkages with the local economy, it should be recognised that these are the type of normal industry linkages that characterise all economic activities.

Unless there is unused capacity in the economy (such as unemployed labour) there may not be a strong relationship between a firm's economic contribution as measured by value added (or other static aggregates) and the welfare or living standard of the community. The use of labour and capital by demand created from the industry comes at an opportunity cost as it may reduce the amount of resources available to spend on other economic activities. This is not to say that the economic contribution, including employment, is not important. As stated by the Productivity Commission in the context of Australia's gambling industries: (Productivity Commission 1999):

Value added trade and job creation arguments need to be considered in the context of the economy as a whole ... income from trade uses real resources, which could have been employed to generate

benefits elsewhere. These arguments do not mean that jobs, trade and activity are unimportant in an economy. To the contrary they are critical to people's well-being. However, any particular industry's contribution to these benefits is much smaller than might at first be thought, because substitute industries could produce similar, though not equal gains.

In a fundamental sense, economic contribution studies are simply historical accounting exercises. No 'what-if', or counterfactual inferences – such as 'what would happen to living standards if the firm or industry disappeared?' – should be drawn from them.

The analysis – as discussed in the report – relies on a national IO table modelling framework and there are some limitations to this modelling framework. The analysis assumes that goods and services provided to the sector are produced by factors of production that are located completely within the state or region defined and that income flows do not leak to other states.

The IO framework and the derivation of the multipliers also assume that the relevant economic activity takes place within an unconstrained environment. That is, an increase in economic activity in one area of the economy does not increase prices and subsequently crowd out economic activity in another area of the economy. As a result, the modelled total and indirect contribution can be regarded as an upper-bound estimate of the contribution made by the supply of intermediate inputs.

Similarly, the IO framework does not account for further flow-on benefits as captured in a more dynamic modelling environment like a Computerised General Equilibrium (CGE) model.

Input-output analysis

Input-output tables are required to account for the intermediate flows between sectors. These tables measure the direct economic activity of every sector in the economy at the national level. Importantly, these tables allow intermediate inputs to be further broken down by source. These detailed intermediate flows can be used to derive the total change in economic activity associated with a given direct change in activity for a given sector.

A widely used measure of the spill-over of activity from one sector to another is captured by the ratio of the total to direct change in economic activity. The resulting estimate is typically referred to as 'the multiplier'. A multiplier greater than one implies some indirect activity, with higher multipliers indicating relatively larger indirect and total activity flowing from a given level of direct activity.

The IO matrix used for Australia is derived from the ABS 2013-14 IO tables, the latest available IO data at the time of the analysis. The industry classification used for IO tables is based on the Australian and New Zealand Standard Industrial Classification (ANZSIC), with 114 sectors in the modelling framework.

Appendix D : Facilitated tourism estimation methodology

This section details the data and methodology used to attribute a proportion of total tourism in New South Wales facilitated by Sydney Airport.

The following data sources were used:

- Tourism Research Australia's (TRA) International visitor Survey (IVS) and National visitor Survey (NVS) for total visitors, visitor nights and regional expenditure in Victoria. This data can be decomposed by source market, use of transportation, and purpose of visit.
- The Bureau of Infrastructure Transport, and Regional Economics (BITRE) data on passenger movements through Sydney Airport. This is used to calculate seats utilisation for the per flight contribution.

International visitor expenditure

TRA data is used to estimate total visitors and visitor nights in Australia. Using TRA data on visitor stopover transportation and city of arrival and departure, it is possible to estimate visitors and nights that use Sydney airports either internationally or domestically during their trip.

In particular, of the 620 million nights spent in Australia, 164 million are facilitated by the Sydney Airports in some form. This does not include international visitors who visit via cruise, or domestic visitors who stopover in NSW via car or other road transports.

With the estimates of visitor nights attributable to Sydney Airport disaggregated down by source markets and purpose of visit, it is possible to apply TRA estimates for expenditure per night *in Australia* for each type of visitor. This creates an average profile of expenditure for each type of user of Sydney Airport weighted by the usage by the different source markets and purposes of visit.

However, not all expenditure can be attributed to Sydney Airport. For instance, for visitors who arrive through Sydney Airport (internationally) and depart through Melbourne Airport (internationally), only half of their expenditure can be attributed to Sydney Airport. The remaining 50% is attributed to Melbourne Airport.

After accounting for expenditure that is partially facilitated through other airports, expenditure on airfares and on retail and food in Sydney Airport precinct is excluded. This is to avoid double counting, as these items are captured (in full or in part) by the Sydney Airport and Precinct contribution. After accounting for these, Sydney Airport is estimated to facilitate \$13.2 billion in international visitor expenditure in 2016-17.

Domestic visitor expenditure

A similar process is used to estimate interstate visitor expenditure that is attributed to Sydney Airport. TRA data is used to estimate interstate visitors that use Sydney Airports during their trip.

Estimates for per trip (for day trip visitors) and per night (for overnight visitors) is applied to arrive at the tourism expenditure for interstate visitors who use Sydney Airport. The expenditure on airfares and within Sydney Airport precinct is also excluded to avoid double counting. In 2016-17, Sydney Airport facilitated \$2.2 billion in domestic visitor expenditure in NSW.

Calculating the facilitated contribution of tourism using the TSA approach

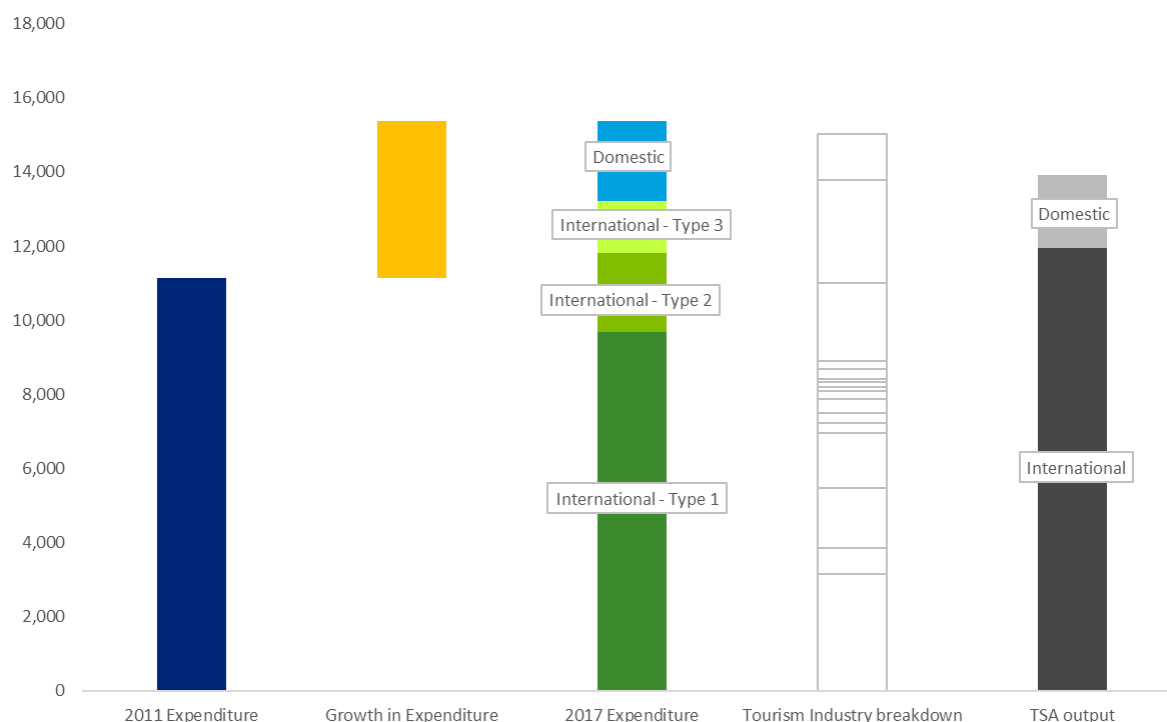
This analysis uses the TSA approach to measuring the economic contribution of facilitated tourism. The TSA framework is conceptually similar to and draws on the ABS Input-Output (IO) tables to generate results. It is based on an international approach to defining the tourism sector and different tourism products and related industries depending on the extent to which they interact with tourists either directly or indirectly.

While conventional IO modelling can be applied to any sector of the economy (including tourism by using an appropriate sector-specific definition of the tourism sector), the TSA approach is Deloitte Access Economics' preferred approach to measuring the economic contribution of the tourism sector as it ensures that the analysis is consistent with international guidelines for measuring and reporting on the economic activity of the tourism sector.

The definition of direct and indirect are slightly different in the TSA approach as direct is defined as activity involving a direct interaction with tourists. Accordingly, the ratio of direct and indirect activity differs from results using a standard IO approach. However, estimates of total value added and employment should be similar across the two approaches.

Figure D.1 summarises the workflow of the calculation of facilitated tourism contribution of Sydney airport in 2016-17. The raw expenditure went from \$11 billion (left-most dark blue bar) in 2014 to 15.4 billion in 2017, which includes expenditures from both domestic and international visitors⁶. Then, the white bar illustrates the breakdown of expenditures by tourism industries from TRA. Finally, the black and grey bar in the right shows the \$13.9 billion gross value added derived based on the TSA approach.

Figure D.1: Workflow of the calculation of facilitated tourism contribution of Sydney airport 2016-17



Source: Deloitte Access Economics (2017)

The use of unit estimates of economic contribution

Deloitte Access Economics has reported on Sydney Airport 'per passenger' and 'per flight' economic contribution. There are a number of parameters that need to be considered in constructing these estimates. This includes the makeup of a typical airline flight, including passenger load factors, the mix of Australian to international passenger and the mix of short-term visitors to longer-time arrivals, e.g., migrants.; and the

⁶ Type 1: International visitors arriving in and departing from Sydney;

Type 2: International visitors arriving in or departing from Sydney;

Type 3: International visitors not arriving in or departing from Sydney, but uses Sydney Airport as part of their domestic journey

expenditure patterns of tourists who are defined as short-term visitor arrivals and facilitated through Sydney Airport.

Importantly, these estimates reflect the contribution of current visitors to the economy from a particular source market. **They do not reflect the net impact on the economy of an increase in tourist arrivals or a change in visitor mix.** An analysis of this net impact would need to consider the potential reallocation of resources from other industries and the extent to which tourism infrastructure, e.g., airports and hotels respond to additional tourists. This would need to be examined through an economic impact study drawing on economy-wide modelling techniques, such as CGE modelling.

Limitation of our work

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