

The economic
contribution of the
Virgin Australia
Group to Australia

March 2017

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Key points

The Virgin Australia Group makes a significant contribution to the Australian economy

- The Virgin Australia Group makes a significant contribution to the Australian economy both through its operations as an Australian business and through the facilitation of domestic and international tourism activity. The economic contribution of the Virgin Australia Group is estimated using an input-output model of the Australian and state economies, based on financial and input data provided by the Virgin Australia Group and data sourced by Deloitte Access Economics (Deloitte).
- Based on the modelling, the estimated **total economic contribution of the Virgin Australia Group to Australia in the 2016 financial year (FY 2016) is \$3.4 billion**, comprised of a \$1.5 billion direct contribution through the value created by its operations and a \$1.8 billion indirect contribution through its expenditure in upstream industries.
- The direct contribution of the Virgin Australia Group is approximately 0.09% of total Gross Domestic Product (GDP) in Australia. **The estimated total economic contribution of the Virgin Australia Group is 0.2% of total GDP in Australia.**
- The Virgin Australia Group is also a significant employer of Australians. **The company directly employs around 8,690 full time equivalent (FTE) workers in Australia. A further 11,740 Australian FTE workers are employed indirectly** as a result of Virgin Australia's operations. In total, the Group is estimated to contribute a total of 20,430 direct and indirect FTE jobs to Australia, which represents 0.2% of total employment in Australia. This is a significant contribution for a single business.

Table i: Economic contribution of the Virgin Australia Group, FY 2016

Metric	Direct	Indirect	Total
Value added (\$m)	1,535	1,839	3,374
Employment (FTEs)	8,690	11,740	20,430

- The Virgin Australia Group facilitates a further significant contribution to the Australian economy by transporting tourists to and around Australia. Deloitte estimates that **\$5 billion in total (direct and indirect) value added was contributed to the Australian economy in FY 2016 from the Australian expenditure of domestic and international tourists who travelled on flights operated by the Virgin Australia Group.**
- In addition, the expenditure by domestic and international tourists that is facilitated by the Virgin Australia Group is estimated to directly contribute to 39,800 FTE jobs and indirectly contribute to a further 15,600 FTE jobs in Australia.
- **In total, the Virgin Australia Group directly and indirectly facilitates and contributes to more than 75,000 Australian FTE jobs, representing 0.75% of total employment in Australia.**

Executive summary

In this report, Deloitte Access Economics details the Virgin Australia Group's contribution to the Australian economy for the 2015-16 financial year.

Combining the direct and indirect economic contribution results, the total economic contribution of the Virgin Australia Group was 20,430 FTE jobs and \$3.4 billion in value added for 2015-16 (see Table ii). This represents 0.2% of total employment and 0.2% of total Gross Domestic Product in Australia.

Table ii: Economic contribution of the Virgin Australia Group, FY 2015-16

Metric	Direct	Indirect	Total
<i>Value added (\$m)</i>	1,535	1,839	3,374
<i>Employment (FTEs)</i>	8,690	11,740	20,430

In addition to the contribution generated by its operations, the Virgin Australia Group plays an important role in supporting tourism in Australia, both through facilitating air travel by domestic and international passengers and through marketing Australian tourism destinations. The estimated contribution of the airline group in facilitating tourism expenditure is based on the estimated spending that occurs by its passengers at their destination (see Table iii and Table iv).

- In 2015-16, the economic contribution associated with expenditure by tourists travelling on the Virgin Australia Group flights was \$5 billion in total value added (direct and indirect).
- The domestic and international tourism expenditure facilitated by the Virgin Australia Group was estimated to directly contribute to 39,800 FTE jobs and indirectly contribute to a further 15,600 FTE jobs.

Table iii: Economic contribution of the Virgin Australia Group to domestic tourism, FY 2016

Metric	Direct	Indirect	Total
<i>Value added (\$m)</i>	2,384	1,796	4,180
<i>Employment (FTEs)</i>	33,331	13,221	46,551

Table iv: Economic contribution of the Virgin Australia Group to international tourism, FY 2016

Metric	Direct	Indirect	Total
<i>Value added (\$m)</i>	512	320	832
<i>Employment (FTEs)</i>	6,512	2,375	8,886

Table v shows the economic contribution of tourism expenditure facilitated by the Virgin Australia Group at the state level, combining the contribution of both domestic and international tourism expenditure.

As shown in Table v, the total value added of the Group across Australia from facilitating this tourism expenditure was estimated to be \$5 billion. Of this, the largest component (\$1.7 billion) was contributed to Queensland. In addition to this, \$1.1 billion in value added was contributed to New South Wales, \$1.0 billion to Victoria and \$0.7 billion to Western Australia.

Table v: Economic contribution of the Virgin Australia Group to tourism by state, FY 2016

Metric	Direct	Indirect	Total
<i>Value added (\$m)</i>			
NSW/ACT	611	452	1063
VIC	555	410	965
QLD	937	708	1645
SA	145	100	245
WA	403	278	682
TAS	111	79	190
NT	134	89	223
Australia	2,896	2,116	5,012
<i>Employment (FTEs)</i>			
NSW/ACT	8,116	3,361	11,477
VIC	7,991	3,177	11,168
QLD	13,266	5,373	18,639
SA	2,242	751	2,993
WA	4,771	1,780	6,551
TAS	1,807	607	2,413
NT	1,650	547	2,197
Australia	39,842	15,596	55,438

New Zealand, the United States and China are the top three source countries of passengers entering Australia on flights operated by the Virgin Australia Group from international destinations. In FY 2016, the Virgin Australia Group operated flights from international destinations in the United States, the United Arab Emirates, New Zealand, Indonesia and countries in the South Pacific.

Table vi presents the number of passengers carried by the Virgin Australia Group by country of origin in FY 2016 and the estimated average expenditure per passenger. The average expenditure per passenger is the product of adjusted spend per night and the average number of nights per visitor. The data on itemised spend per night and the average number of nights per visitor are obtained from the International Visitor Survey published by Tourism Research Australia. The adjusted expenditure figures include spend on accommodation, food, transport and activities but do not include the prices of airfares and package tours as these are accounted for in the direct contribution reporting.

The average total expenditure per Chinese passenger is \$6,027, followed by \$2,548 per American passenger and \$1,473 per passenger from New Zealand. Collectively, passengers from these three countries of origin account for 65% of total facilitated tourism expenditure for the Virgin Australia Group.

The China per passenger figure is relatively higher due to the impact of longer stays by visitors who travel to Australia for the purposes of education or employment. For illustrative purposes, Table vi also shows the average expenditure of passengers from the top three

countries of origin excluding passengers who visit Australia for the purposes of education or employment.

Table vi: Expenditure per passenger for top 3 source markets of the Virgin Australia Group, FY 2016

	New Zealand	USA	China
Total visitor arrivals carried by Virgin	222,700	54,700	39,500
Average expenditure per visitor ¹	\$1,473	\$2,548	\$6,027
Share of facilitated tourism expenditure	30%	13%	22%
<i>Average expenditure per visitor (excluding education and employment visitors)</i>	<i>\$1,247</i>	<i>\$2,026</i>	<i>\$2,776</i>

Notes: (1) average spend in Australia for passengers over 15 years of age

1 Introduction

Deloitte Access Economics was commissioned by the Virgin Australia Group (or 'the Group') to undertake an economic study of the Group's contribution to the Australian economy for the 2016 financial year (FY 2016).

The contribution of the Virgin Australia Group extends beyond its direct activities because it is a key consumer of upstream inputs and thus indirectly contributes to additional economic activity through its supply chain. The Virgin Australia Group also plays a key role in Australia's tourism sector, transporting visitors from overseas to Australia and transporting both overseas visitors and domestic travellers to tourism destinations within Australia.

This report presents estimates of the economic contribution of Virgin Australia, drawing on a range of data and modelling techniques. In particular, it estimates:

- the direct economic contribution of the Virgin Australia Group;
- the indirect economic contribution of the Group's activities; and
- the value added to the Australian economy at the national and state levels from the Australian expenditure of domestic and international tourists who travelled on flights operated by the Virgin Australia Group.

The Virgin Australia Group provided detailed financial data which was used to assess the direct and economic contribution of the Group. This included the direct value added associated with the Virgin Australia Group's operations, as well as the flow-on contributions to upstream industries. The economic contribution associated with tourism expenditure facilitated by the Virgin Australia Group was based on a range of publicly available data, including data from Tourism Research Australia (TRA), the Australian Bureau of Statistics (ABS), the Bureau of Infrastructure, Transport and Regional Economics (BITRE), and data from the Virgin Australia Group.

The estimates of the direct and indirect economic contribution, as well as the facilitated tourism contribution are based on Input-Output (IO) modelling techniques. The ABS produces IO tables which provide the value added for each sector of the Australian economy, as well as the linkages between sectors. This allows the activities of the Virgin Australia Group to be traced through the economy, and the value added at each stage to be estimated.

This report is structured as set out below:

- Chapter 2 provides background on the Virgin Australia Group's activities and the approach taken to estimating its economic contribution.
- Chapter 3 sets out the economic contribution of the Virgin Australia Group at the national level.
- Chapter 4 presents estimates of the facilitated tourism contribution of the Virgin Australia Group's activities at both the national and state levels.
- Technical details of the economic modelling are presented in Appendix A.

2 Background and approach

The Virgin Australia Group is a diversified airline group that operates domestic, international, low cost, charter and cargo airline businesses as well as the frequent flyer program Velocity Frequent Flyer. The Group offers aviation products and services to many aviation customer segments, including corporate, government, premium, low cost, freight, regional and charter customers.

The Group began operations in 2000 as Virgin Blue, offering low cost domestic flights. In 2004, the airline commenced international services.

In 2011, the airline rebranded as Virgin Australia. Virgin Australia evolved into a full service airline with a larger share of the corporate travel market. The Group also diversified its operations and grew its market share with a number of acquisitions:

- In 2013, the Group acquired SkyWest, a regional and charter airline based in Western Australia.
- In 2015, the Group finalised its acquisition of low cost carrier Tiger Airways, which was rebranded as Tigerair Australia.

2.1 Approach to measuring the economic contribution

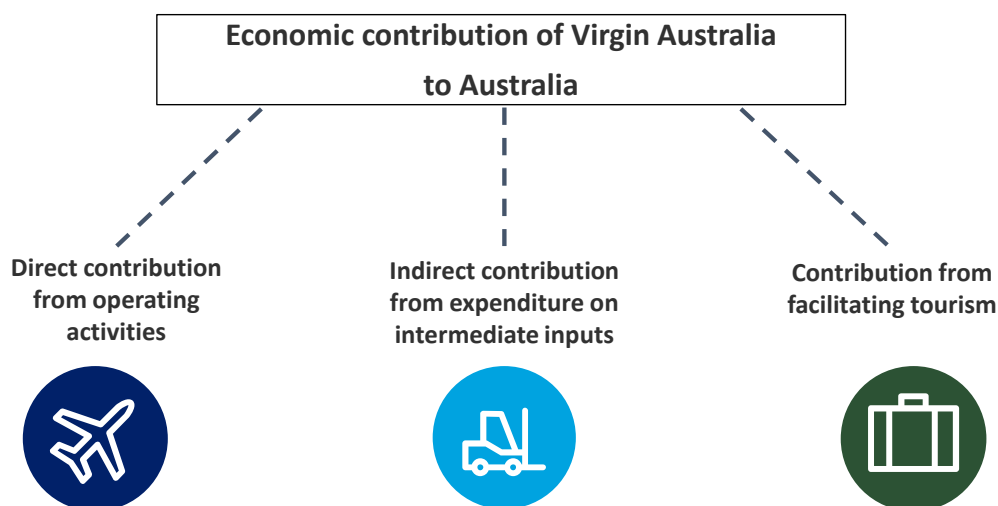
Economic contribution studies provide a snapshot of the contribution of a firm or industry at a particular point in time. There are two parts to the economic contribution of an entity; its direct contribution and its indirect contribution.

- The direct contribution of an industry is measured using common financial measures such as, revenue and cost of goods sold and is based on a firm's direct value-add to the Australian economy. It is calculated using the income approach to Gross Domestic Product (GDP), which builds up the value of a firm or sector's output by adding the returns to capital (measured in terms of gross operating surplus), and the returns to labour (measured as wages paid). That is, it estimates the total income generated, net of costs, through the activities of the entity being modelled.
- The indirect contribution of an entity is measured using Input-Output (IO) modelling, an approach consistent with the framework used by the Australian Bureau of Statistics in compiling the *Australian National Accounts*. The interlinkages with other sectors of the economy through expenditure on intermediate inputs are observed and used to analyse which outputs represent final demand and which flow to other sectors as inputs. The expenditure on intermediate inputs drives the indirect contribution to value-add and is determined through **Deloitte Access Economics' Regional Input-Output Model** (DAE-RIO-M).

Beyond its direct and indirect economic contribution, the Virgin Australia Group plays a vital role in the Australian tourism industry. The Group facilitates an additional contribution to the economy through the expenditure of domestic and international tourists that travel on flights operated by the Virgin Australia Group. As a result, this report also evaluates the economic

contribution made through the Group’s support of domestic and international tourism in Australia. Figure 2.1 shows the three main components of the economic contribution of the Virgin Australia Group and the activity it facilitates.

Figure 2.1 Economic contribution of the Virgin Australia Group to Australia



2.2 Data provided by the Virgin Australia Group

The Virgin Australia Group provided Deloitte Access Economics with detailed profit and loss data for FY 2016. Using this data, revenue and expenditure figures were determined, allowing for the estimation of the direct economic contribution.

The data cover the following business units:

- Virgin Australia Domestic;
- Virgin Australia International;
- Tigerair Australia; and
- Velocity Frequent Flyer.

The revenue and expenditure numbers for these business units were aggregated and not analysed separately.

Aside from the revenue by the Virgin Australia Group through its agreement with its alliance partners, this analysis does not assess the economic contribution to Australia from the Virgin Australia Group’s alliance or alliance partners. While the economic contribution has not been directly measured in this report, the Virgin Australia’s Group alliance are another important way in which Australian tourism is promoted and supported.

In estimating the Virgin Australia Group’s indirect contribution the Australian economy, expenditure on intermediate inputs has been allocated between expenditure occurring within Australia and that occurring internationally. The majority of the Virgin Australia Group’s expenditure on intermediate expenditure occurs in Australia, with over half of its intermediate inputs sourced locally. The majority of the expenditure on inputs from outside Australia is attributable to jet fuel, commissions and selling costs and aircraft operating lease

rentals. These inputs are usually unable to be sourced locally. Expenditure on intermediate inputs that occurs overseas is not included in the assessment of the Virgin Australia Group's economic contribution to Australia.

The aggregate information disclosed in this report is for the purposes of providing a complete view of the Virgin Australia Group's economic contribution. All other information provided by the Virgin Australia Group to Deloitte Access Economics for the purposes of this report is confidential.

3 Economic contribution of Virgin Australia Group operations

This section outlines the input-output modelling techniques and results of the economic contribution of the Virgin Australia Group's operations.

3.1 Methodology

The Virgin Australia Group's economic contribution for FY 2016 is divided into direct and indirect components. Direct economic contribution estimates the value added that the Group contributes to the Australian economy directly through its operations. Indirect economic contribution represents the economic contribution the Virgin Australia Group makes to the Australian economy through its expenditure on intermediate inputs.

3.1.1 Direct contribution

While revenue is more commonly reported in financial accounts, value added provides a more accurate assessment of a firm's contribution to the overall economy. A firm's direct value added nets out the value that is created by upstream industries and thus isolates the value *created* by the Virgin Australia Group. Direct value added includes both returns to capital and returns to labour as well as any net production taxes minus subsidies paid by the Virgin Australia Group.

The returns to capital, also referred to as the gross operating surplus (GOS), is determined by calculating the ongoing operational profit and operational costs, prior to the impacts of interest, tax, depreciation and amortisation. The returns to labour are calculated by aggregating compensation provided to employees either through wages or other employment benefits.

3.1.2 Indirect contribution

Measuring the indirect contribution involves measuring the indirect or flow-on contribution of the Virgin Australia Group's activities. This is the value added generated in upstream sectors of the economy that produce inputs to the airline's operation. The flow-on contribution is based on the Virgin Australia Group's expenditure in these industries and the profit and wages that are generated as a result.

3.2 The Virgin Australia Group's economic contribution

Based on modelling, the combined direct and indirect contribution of the Virgin Australia Group to the Australian economy in FY 2016 was \$3.4 billion.

Approximately 68% of the Virgin Australia Group’s direct value-add is attributable to labour income. While the airline industry may appear capital intensive, this split of value-add indicates a large share of the income generated by the airline’s activities flows to employees.

Table 3.1 Economic contribution of Virgin Australia, FY 2016

Metric	Direct	Indirect	Total
<i>Value added (\$m)</i>	1,535	1,839	3,374
<i>Employment (FTEs)</i>	8,690	11,740	20,430

The indirect contribution of the Virgin Australia Group was \$1.8 billion in 2015-16. As previously mentioned, this is the value added generated in upstream sectors of the economy that produce inputs to the airline’s operation.

Combining the direct and indirect measures, the total economic contribution of the Virgin Australia Group to the Australian economy for FY 2016 was \$3.4 billion. As a share of Australian GDP, this represents 0.2% of total economic activity in Australia.

In terms of employment, the Virgin Australia Group’s direct employment for the FY 2016 was 8,690 FTEs, while indirect employment was 11,740 FTEs. The indirect component of employment surpassed the direct, reflecting the labour intensive nature of the industries that support the Group’s operations. As with total economic contribution, the total contribution of the Virgin Australia Group makes up almost 0.2% of total employment in Australia, a significant contribution for a single firm.

4 Contribution to domestic and international tourism

In addition to the economic contribution associated with its operating activities, the Virgin Australia Group plays an instrumental role in supporting and promoting tourism in Australia, both through facilitating air travel by domestic and international passengers and through marketing Australian tourism destinations to domestic and international consumers. In particular, the extensive network operated by the Virgin Australia Group plays a pivotal role in allowing tourists to access many tourist and regional destinations throughout Australia.

The estimated contribution of the Virgin Australia Group in facilitating domestic and international tourism expenditure is based on the estimated expenditure that occurs by travellers at the destination, and does not include expenditure on airfares which is captured as part of the direct economic contribution. The chapter starts with the description of the methodology used to measure the economic contribution of the Virgin Australia Group to tourism in Australia, following by a discussion of the results.

4.1 Methodology

4.1.1 Domestic tourism

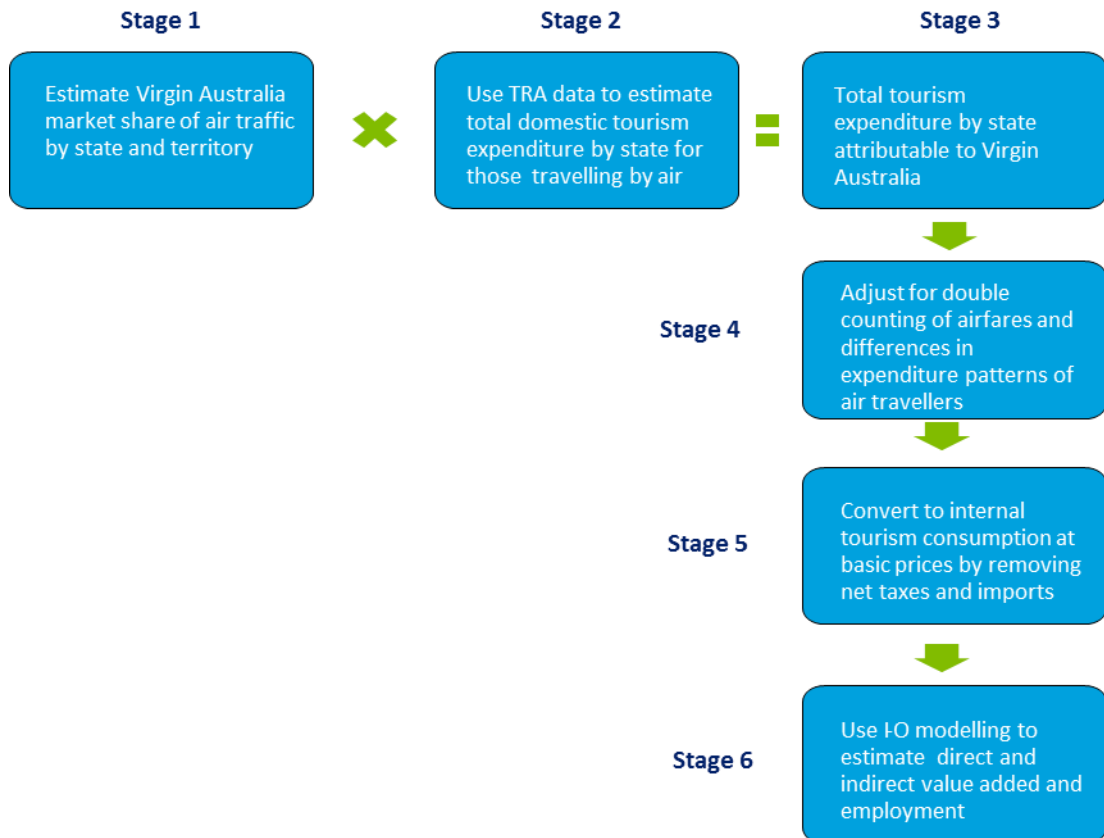
Figure 4.1 provides an overview of the process used to estimate the economic contribution of domestic tourism expenditure facilitated by the Virgin Australia Group. In the first stage, market share information by route provided by the Group was matched to data on passenger numbers on each route from the Bureau of Infrastructure, Transport and Regional Economics (BITRE). This was used to calculate estimates of passenger numbers carried by the Virgin Australia Group on each route.

Routes were aggregated to a state level by attributing half the traffic on a route pair to each state. For example, 50% of traffic on the Sydney to Melbourne route was attributed to NSW and 50% to Victoria. Market shares by state were developed separately for interstate and intrastate travel.

In the second stage, these market shares were multiplied by estimates of regional expenditure by domestic overnight and domestic day visitors in each state. To calculate regional expenditure, information on average expenditure per night from the Tourism Research Australia (TRA) National Visitor Survey (2015a) was combined with other data from TRA on visitor numbers travelling interstate and intrastate by air.

In the third stage, estimates of market shares by state are multiplied by total tourism expenditure for air travellers (calculated in the second stage) to develop estimates of total tourism expenditure attributable to the Virgin Australia Group for both interstate and intrastate travel.

Figure 4.1 Overview of methodology for estimating the domestic tourism contribution



This data is then subject to some further adjustments in the fourth stage to ensure it is consistent with the expenditure profile of airline travellers noting that expenditure estimates are based on all domestic tourists not just airline travellers.

- First, all expenditure on domestic airfares is excluded to avoid double-counting expenditure already included in the economic contribution of the Virgin Australia Group.
- Second, expenditure on vehicle maintenance and repairs is excluded on the basis that this is more likely to be incurred by those on driving holidays.
- Finally, expenditure on fuel is reduced to the average amount per day incurred by international tourists as those travelling by air are expected to spend less on fuel than those travelling to a destination by car. These assumptions are likely to be conservative because it is likely that air travellers have a higher average expenditure per night than those travelling by car or bus.

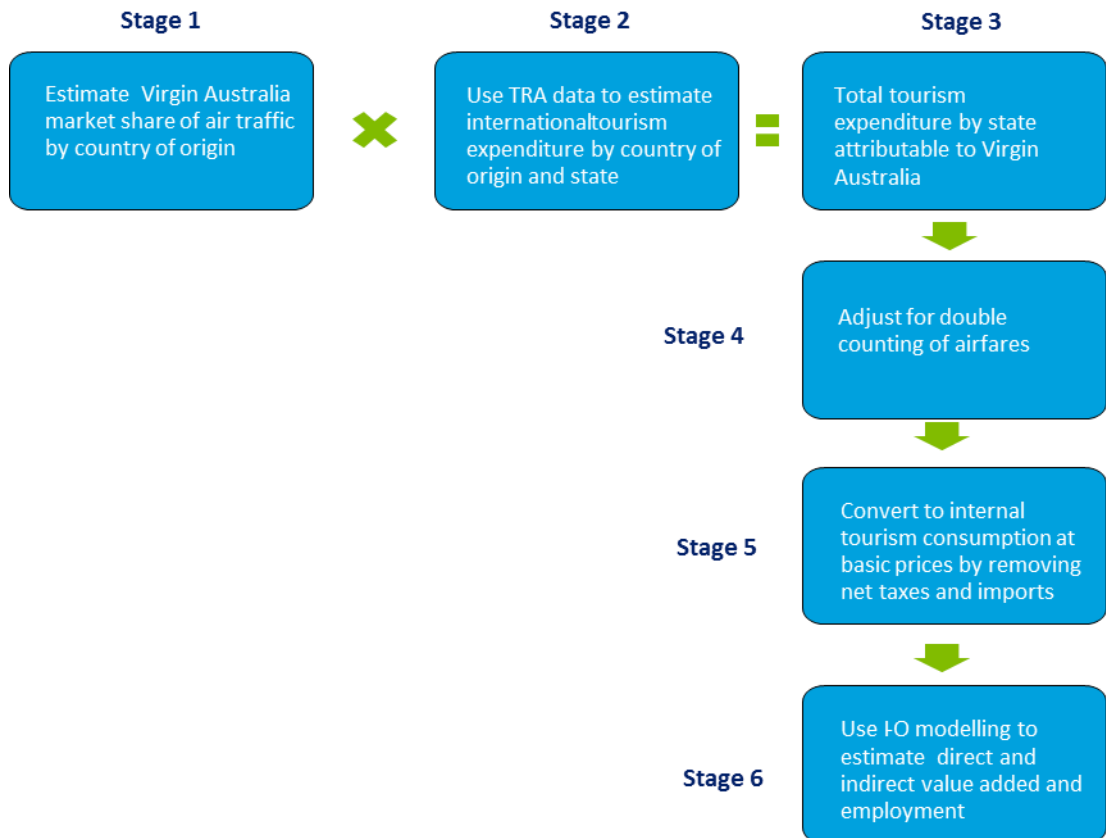
The next stage involves adjusting tourism expenditure, which is recorded in purchaser prices to internal tourism consumption at basic prices by removing the impact of imports and net taxes on production and adjusting for imputed consumption.

Finally, input-output modelling is used to convert internal tourism consumption by item to estimates of direct and indirect value added and indirect and direct employment.

4.1.2 International tourism

A similar procedure was used to estimate the economic contribution of international tourism facilitated by the Virgin Australia Group. The various stages in this process are outlined in Figure 4.2.

Figure 4.2 Overview of methodology for estimating the international tourism contribution



Estimating the market share of the Virgin Australia Group is more complicated in the case of international tourism. While BITRE has information on airline travel by route, this does not map neatly to country of origin for some countries and does not account for differences in the ratio of foreign to local residents carried by different airlines.

Deloitte Access Economics received data from the Virgin Australia Group on the country of origin of incoming passengers who entered Australia on flights operated by the Virgin Australia Group.

In the second stage this data was multiplied by estimates of expenditure (excluding prepaid airfares and package tours) by country of origin for inbound tourist arrivals for each state from TRA. The resulting estimates reflect the total international tourism expenditure for each state attributable to tourists travelling on the Virgin Australia Group.

The next stage involves adjusting this expenditure to exclude expenditure on international and domestic airfares in Australia to avoid double counting any expenditure as part of the direct economic contribution. As for the domestic tourism expenditure, this was then

converted to tourism consumption at basic prices and then converted to estimates of direct and indirect value added and employment using Input-Output modelling.

4.2 Economic contribution results

The economic contribution of the tourism activity facilitated by the Virgin Australia Group is shown in Table 4.1 below. ***The total economic contribution associated with expenditure by domestic tourists travelling on the Virgin Australia Group in FY 2016 was \$4.2 billion, comprising \$2.4 billion in direct value added and \$1.8 billion in indirect value added.***

The contribution of this tourism expenditure to employment was 46,551 FTEs. This tourism expenditure contributed directly to the employment of 33,331 FTEs and indirectly to the employment of 13,221 FTEs as a result of flow-on effects from tourism expenditure to other sectors of the economy.

Table 4.1 Economic contribution of the Virgin Australia Group to domestic tourism, FY 2016

Metric	Direct	Indirect	Total
Value added (\$m)	2,384	1,796	4,180
Employment (FTEs)	33,331	13,221	46,551

Table 4.2 shows the estimated economic contribution of the Virgin Australia Group through facilitating international tourism expenditure. In total, ***expenditure associated with international tourists carried by the Virgin Australia Group was estimated to contribute \$832 million in value added to the Australian economy, including almost \$512 million in direct value added and \$320 million in indirect value added.***

The expenditure of international tourists carried by the Group was estimated to support the employment of 8,886 FTEs, 6,512 FTEs directly and 2,375 FTEs indirectly. The contribution of international tourism expenditure to indirect employment reflects the flow-on effects of tourism expenditure to other downstream sectors of the economy.

Table 4.2 Economic contribution of the Virgin Australia Group to international tourism, FY 2016

Metric	Direct	Indirect	Total
Value added (\$m)	512	320	832
Employment (FTEs)	6,512	2,375	8,886

Table 4.3 shows the economic contribution of the tourism expenditure facilitated by the Group at a state level, combining the contribution of both domestic and international tourism expenditure. The total value added across Australia associated with this tourism expenditure was estimated to be \$5 billion. Of this, Queensland contributed the largest component (\$1.65 billion), due to the relatively large number of tourist flows that the Group facilitates in Queensland. NSW contributed \$1.06 billion in value added, while Victoria contributed \$0.97 billion.

The contribution of this tourism expenditure to employment was also the largest in Queensland (18,639 FTEs) followed by NSW (11,477 FTEs) and Victoria (11,168 FTEs).

Table 4.3 Economic contribution of the Virgin Australia Group to tourism by state, FY 2016

Metric	Direct	Indirect	Total
<i>Value added (\$m)</i>			
NSW/ACT	611	452	1063
VIC	555	410	965
QLD	937	708	1645
SA	145	100	245
WA	403	278	682
TAS	111	79	190
NT	134	89	223
Australia	2,896	2,116	5,012
<i>Employment (FTEs)</i>			
NSW/ACT	8,116	3,361	11,477
VIC	7,991	3,177	11,168
QLD	13,266	5,373	18,639
SA	2,242	751	2,993
WA	4,771	1,780	6,551
TAS	1,807	607	2,413
NT	1,650	547	2,197
Australia	39,842	15,596	55,438

Significant source markets

New Zealand, the United States and China are the top three source countries of passengers entering Australia on flights operated by the Virgin Australia Group from international destinations. In FY 2016, the Virgin Australia Group operated flights from international destinations in the United States, the United Arab Emirates, New Zealand, Indonesia and countries in the South Pacific.

Table 4.4 presents the number of passengers carried by the Virgin Australia Group by country of origin in FY 2016 and the estimated average expenditure per passenger. The average expenditure per passenger is the product of adjusted spend per night and the average number of nights per visitor. The data on itemised spend per night and the average number of nights per visitor are obtained from the International Visitor Survey published by Tourism Research Australia. The adjusted expenditure figures include spend on accommodation, food, transport and activities but do not include the prices of airfares and package tours as these are accounted for in the direct contribution reporting.

The average total expenditure per Chinese passenger is \$6,027, followed by \$2,548 per American passenger and \$1,473 per passenger from New Zealand. Collectively, passengers from these three countries of origin account for 65% of total facilitated tourism expenditure for Virgin Australia.

China per passenger figure is relatively higher due to the impact of longer stays by visitors from China who travel to Australia for the purposes of education or employment. For illustrative purposes, Table 4.4 also shows the average expenditure of passengers from the top three countries of origin excluding passengers who visit Australia for the purposes of education or employment.

Table 4.4 Expenditure per passenger for top 3 source markets of the Virgin Australia Group, FY 2016

	New Zealand	USA	China
Total visitor arrivals carried by Virgin	222,700	54,700	39,500
Average expenditure per visitor ¹	\$1,473	\$2,548	\$6,027
Share of facilitated tourism expenditure	30%	13%	22%
<i>Average expenditure per visitor¹ (excluding education and employment visitors)</i>	<i>\$1,247</i>	<i>\$2,026</i>	<i>\$2,776</i>

Notes: (1) average spend in Australia for passengers over 15 years of age

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Appendix A: Economic contribution modelling framework

Economic contribution studies are intended to quantify measures such as value added, exports, imports and employment associated with a given industry or company, in a historical reference year. The economic contribution is a measure of the value of production by a company 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 A.1).

Table A.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 (2016)

Value added

The measures of economic activity provided by a contribution study are consistent to 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) and gross territory product.

There a number of ways to measure GDP:

- **Expenditure approach** – measures the expenditure; of households, on investment, government and net exports
- **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 plus net taxes less subsidies on products equals gross domestic product. Given the relationship to GDP, the value added measure can be thought of as the increased contribution to welfare.

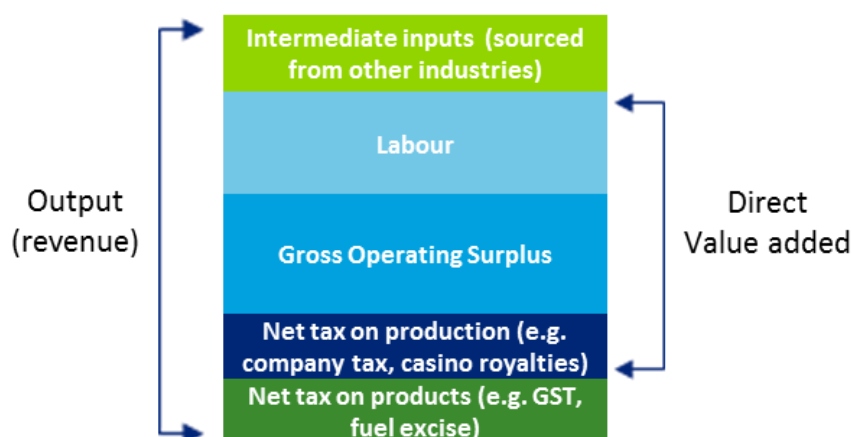
Value added is the sum of:

- Gross operating surplus (GOS). 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 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 A.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 company.

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

Figure A.1: Economic activity accounting framework



Source: Deloitte Access Economics.

It should be noted that Virgin Australia also levies a range of net taxes on products which it then passes on to the government. These include the passenger service charges, passenger movement charges, international security charges and GST. These net taxes on products are not included in value added but are included in GDP.

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 from labour and capital in the company.

The **indirect** contribution is a measure of the demand for goods and services produced in other sectors as a result of demand generated by Virgin Australia. Estimation of the indirect economic contribution is undertaken in an IO framework using Australian Bureau of Statistics IO tables which report the inputs and outputs of specific sectors of the economy (ABS 2015a).

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. These measures overstate the contribution to value added because they include activity by external companies 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'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 industries¹:

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 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,

¹ Productivity Commission (1999), *Australia's Gambling Industries*, Report No. 10, AusInfo, Canberra, (page 4.19).

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 20012-13 IO tables (2015a). The industry classification used for IO tables is based on ANZSIC, with 114 sectors in the modelling framework.

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