Global Trade Analysis Project
https://www.gtap.agecon.purdue.edu/

This paper is from the
GTAP Annual Conference on Global Economic Analysis
https://www.gtap.agecon.purdue.edu/events/conferences/default.asp

Economic Effects of the Carbon Pollution Reduction Scheme on the Australian Tourism Industry: A Dynamic CGE Analysis

Serajul Hoque*^, Peter Forsyth*, Larry Dwyer[◊], Ray Spurr[◊], Thiep Van Ho* & Daniel Pambudi*

*Department of Economics, Monash University

Clayton, Victoria 3800, Australia

[◊]School of Marketing, Australian School of Business

University of New South Wales, NSW 2052, Australia

Paper presented at the Twelfth Annual Conference on Global Economic Analysis (GTAP)

"Trade Integration and Sustainable Development: Looking for an Inclusive World",

Santiago, Chile, June 10-12, 2009.

^Corresponding author: Serajul Hoque, Department of Economics, Menzies Building, Monash University, Wellington Road, Clayton, VIC 3800, Australia. Tel: +61 3 9902 0786, Fax: +61 3 9905 5476, Email: Serajul.Hoque@buseco.monash.edu.au

---

*[◊]The authors are member of the Centre for Economics and Policy (CEP) of the Sustainable Tourism Cooperative Research Centre (STCRC) in Australia.

Economic Effects of the Carbon Pollution Reduction Scheme on the Australian Tourism Industry: A Dynamic CGE Analysis

Serajul Hoque, Peter Forsyth, Larry Dwyer, Ray Spurr, Thiep Van Ho & Daniel Pambudi

Abstract

This paper presents preliminary results from a study of the potential effects of introduction by the Australian government of its proposed Carbon Pollution Reduction Scheme (CPRS) on the Australian economy and in particular the tourism sector in Australia. The CPRS is intended to introduce a cap and trade mechanism for reducing Greenhouse Gas emissions in Australia to commence in 2010.

The paper begins with a brief presentation of major estimates of tourism's contribution to the Australian economy based on Tourism Satellite Account (TSA) analysis and provides estimates of the Carbon Footprint of the Australian tourism industry based on this TSA data. The key features of the proposed CPRS are also presented. Finally, the paper discusses preliminary results from a set of simulations that are carried out using a dynamic multi-sectoral, multi-regional CGE model to assess the likely effects of the CPRS on the Australian economy, with a particular focus on tourism industry. The simulation results indicate that with the CPRS in place, real GDP would fall because, firstly, the emissions price under the CPRS acts as a tax and thus becomes a distortion which reduces economic efficiency and secondly, the emissions price reduces the incentive for producers to use variable factors of production - labour and capital. The majority of industries would experience small contractions in output relative to baseline. The tourism sector experiences a slight contraction in line with the general shrinkage of the economy as a whole.

Keywords: *tourism satellite accounts, tourism's carbon footprint, carbon pollution reduction scheme, greenhouse gas (GHG) emissions, regional dynamic CGE model, Australia.*

JEL classification codes*: Q54, Q58, L83 and C68*

Table of Contents

Introduction

This paper presents preliminary results from a study of the potential economic effects of the Australian government's proposed Carbon Pollution Reduction Scheme (CPRS) on the tourism sector in Australia and the broader Australian economy[1]. The CPRS is a cap and trade scheme for Greenhouse Gas (GHG) emissions which the Australian government proposes to introduce commencing in the year 2010 to bring about a reduction in Australia's emissions of between 5 and 15 per cent from 2000 levels by 2020, and 60 per cent by 2050. The paper reports results from the first stage of an analysis funded by Australia's Sustainable Tourism Cooperative Research Centre to examine this issue and the implications for the Australian tourism industry.

Climate change is a global challenge that requires a long-term global solution in order to avoid environmental, social and economic dislocation. GHGs cause damage both within and also well outside the country in which they occur. Once emitted into the atmosphere, their impact is substantial and long-lasting, for both developed and developing economies. The adverse consequences of climate change, and their amelioration, will last for generations and will require fundamental shifts in consumer and business behaviour. Since tourism is an industry that depends substantially upon the natural environment, stakeholders have a particular interest and concern as to how the policies that are being developed to mitigate the impacts of climate change will impact on their operations.

Computable general equilibrium (CGE) models, because of their computational rigour and extensive analytical capability, have become the preferred policy-analysis technique in the examination of the economy-wide effects of policy changes. Over the last decade, CGE

[1] The authors acknowledge the support of the Australian Sustainable Tourism Cooperative Research Centre (STCRC) for this project.

models have been applied increasingly to study possible economic impacts of policy changes on the tourism industry (Adams and Parmenter, 1995; Berrittellaa *et al.*, 2006; Blake, Sinclair and Sugiyarto, 2001; Dwyer, Forsyth and Spurr, 2006; Dwyer *et al.*, 2003 & 2006; Mabugu1, 2002; and Nayaran, 2004).

This paper examines how the CPRS scheme will impact on the tourism industry, using a regional dynamic CGE modelling approach. The CPRS will create a price for carbon emissions which will raise costs in those industries which directly and indirectly produce emissions, such as tourism. Even though most tourism businesses are not large enough to participate in emissions trading under the scheme in their own right, the CPRS will set in train changes across the economy which will impact on the tourism industry. For example, by making exports more costly, it will reduce exports leading to pressure on the exchange rate. The reduction in the exchange rate will help inbound tourism (tourism exports). But tourism exports will also be negatively affected by the rises in the price of its inputs. Tourism imports will be affected as the higher exchange rate generates more outbound travel. The implementation of the CPRS will reduce real disposable incomes, which will reduce demand for domestic tourism in Australia.

The remainder of this paper is organised as follows. The next section presents major estimates of tourism's contribution to the Australian economy based on Tourism Satellite Account (TSA) analysis. Section Three explores the issues in developing the Carbon Footprint of Australian tourism which measures the greenhouse gas emissions produced by the tourism industry. The key features of the CPRS in Australia are presented in Section Four. Section Five outlines briefly the structure of the Monash Multi-Regional Forecasting (MMRF) model and provides a description of the simulation scenarios that are carried out to assess the possible economic effects of the CPRS on the Australian tourism industry. The

simulation results for macroeconomic, sectoral and tourism outcomes are reported in Section Six. Finally, Section Seven provides concluding comments.

Tourism's Contribution to the Australian Economy: Tourism Satellite Account Based Analysis

The STCRC has developed an integrated set of Tourism Satellite Accounts (TSA) for each of the six Australian states and two territories to examine tourism's contribution to the Australian economy (Ho *et al.*, 2008a). These regional TSAs take the same form as the national TSA published by the Australian Bureau of Statistics (ABS) (ABS, 2008) which follows the UNWTO methodology (OECD *et al.*, 2000).

A TSA is a static set of accounts designed to complement the normal set of National Accounts. It can be used to measure the size or economic contribution of the tourism industry, in terms of such variables as output, value added and, with the inclusion of an employment module as provided here, employment. It also provides information about the detailed composition of the tourism industry, for example, by indicating how much value added is present in the accommodation part of the industry or the local transport part. This information about the size of the industry is useful for policy makers and in applications which require measures of the size and content of the tourism industry. Thus, for example, TSA for Australia have been used to measure trends in the productivity, prices and profitability of the tourism industry as a whole (Dwyer *et al.*, 2005). The Australian state and territory TSAs have been utilised to derive the pattern of taxes on tourism (Forsyth *et al.*, 2007), the indirect economic contribution of tourism (Ho *et al.*, 2008c), and a carbon footprint for tourism (Forsyth *et al.*, 2008) in Australia.

Table 1 summarises the contribution of tourism to gross value added (GVA), gross domestic product (GDP)/gross state product (GSP) and employment in Australia by state and territory for 2006–07. In 2006–07, tourism generated $32.3 billion of Australian industry gross value added, $38.9 billion of gross domestic product, and 482.9 thousand jobs. These contributions of tourism represent 3.4 per cent of Australia's GVA, 3.7 per cent of GDP, and 4.7 per cent of total employment.

Table 1: Estimates of Contribution of Tourism by State and Territory, 2006–07

	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	AUS
Tourism GVA ($m)	11279.75	6905.29	7127.92	1842.97	2972.66	835.86	775.78	565.79	32306.02
Tourism net taxes on products ($m)	2057.37	1343.98	1657.27	412.52	682.06	188.43	158.14	130.26	6630.05
Tourism GSP, GDP ($m)	13337.13	8249.28	8785.19	2255.49	3654.72	1024.29	933.92	696.05	38936.06
Tourism employment ('000)	157.8	102.18	118.9	27.7	45.66	13.7	9.68	7.28	482.9
GVA ($m)	306979.75	230645.3	181638.56	62652.05	127784.47	18640.47	13369.55	20170.13	961880.26
Tourism share of GVA (%)	3.67	2.99	3.92	2.94	2.33	4.48	5.8	2.81	3.36
GSP, GDP ($m)	335144	247440	195704	69540	141368	21088	14494	21586	1046364
Tourism share of GSP, GDP (%)	3.98	3.33	4.49	3.24	2.59	4.86	6.44	3.22	3.72
Employment ('000)	3307.22	2548.89	2091.72	755.43	1085.53	223.16	102.46	188.01	10302.42
Tourism share of employment (%)	4.77	4.01	5.68	3.67	4.21	6.14	9.45	3.87	4.69

Source: Ho *et al*. (2008b).

Tourism Industry Gross Value Added

Tourism industry gross value added represents the total basic value of Australian produced goods and services consumed by all visitors (international, interstate, intrastate, and outbound) after deducting the costs of goods and services used in the process of production. Value-added is the most widely accepted measure of the contribution of an industry to the economy. Table A.1 located in the Appendix 4 shows tourism gross value added by tourism industry for the six states and two territories of Australia in 2006–07.

Tourism Industry Employment

Tourism employed persons has been derived by multiplying the number of employed persons in each industry by the proportion of total output of the industry which is related to tourism. An employed person is aged 15 years or over who, during the reference week of the relevant Labour Force survey, worked for one hour or more for pay, profit, commission or payment in-kind in a job or business. Table A.2 located in the Appendix 4 shows tourism employment by tourism industry for the six states and two territories of Australia in 2006–07.

The Carbon Footprint of Australian Tourism

This section focuses on the 'Carbon Footprint' of the Australian tourism industry. Increasingly the shorthand term 'Carbon Footprint' is used to refer to the amount of GHG emissions (carbon dioxide, CO_2, equivalent) associated with the production and consumption of goods and services at the level of an individual firm, industry or entire economy. The production of goods and services for tourism results in GHG emissions in both the home economy, Australia, and abroad. The measures presented here are comprehensive and include all the GHG emissions produced by the Australian tourism globally. They include GHG emissions which arise directly from tourism production- for example from the fuel used by tour buses; indirect GHG emissions, for example, from electricity used by resorts; and GHG emissions from imports which are provided to tourists or the industry, and from the transport of those imports- these emissions do not come from Australian production.

This paper reports outputs from two approaches, namely *production based* and *expenditure based*, to estimate the direct and indirect carbon 'costs' of the Australian tourism industry for the year 2003-04[2]. These Carbon Footprint estimates in Mt (millions of tonnes), include the

[2]The Carbon Footprint is estimated for 2003-04, the latest year for which the full data set necessary was available.

home (Kyoto Protocol) emissions and, in addition, emissions from international aviation and overseas production, in order to gain an indication of the global emissions from Australian tourism. For a detailed analysis of the carbon footprint of the Australian tourism industry, see Forsyth *et al.* (2008).

Production Based Measures

The *Production based estimates* are for the Carbon Footprint arising from production of the Australian tourism industry, as defined and measured by the Australian Tourism Satellite Account (TSA). The production based estimates include GHG emissions directly produced by tourism industries as defined in the Australian TSA; inbound and outbound aviation services of Australian airlines; and GHG emissions from imports used in producing goods and services for sale to the Australian tourism industry. They exclude inbound or outbound services of non-Australian based airlines; and GHG emissions from imports directly purchased by tourists.

Table 2: Production Based Carbon Footprint (GHG in Mt), 2003-04[3]

Source	Kyoto	Non-Kyoto		Total GHG (Kyoto+non-Kyoto) emissions	% share of total direct & indirect GHG emissions
	Australian Kyoto emissions	International aviation Australian airlines emissions	Foreign sourced emissions		
Direct emissions from tourism industries	10.5			10.5	19.3
Emissions from tourism-related private motor vehicle use	11.1			11.1	20.4
Emissions from international aviation	4.7		4.7	8.6	
Total direct GHG emissions	21.6	4.7		26.3	48.4
Indirect emissions from tourism inputs	18.8			18.8	34.6
Emissions from imports		8.1	8.1	14.9	
Emissions from transport of imports	1.2	1.2	2.2		
Total indirect GHG emissions	18.8		9.3	28.1	51.7
Total direct and indirect GHG emissions	**40.4**	**4.7**	**9.3**	**54.4**	**100.0**

Source: Forsyth et al. (2008).

[3]Table data record the estimates of CO2 equivalent emissions in million tonnes (Mt).

Using the *Production approach* we calculate total (direct plus indirect) GHG emissions to be 54.4 Mt (direct emissions 26.3 Mt and indirect emissions 28.1 Mt). When Australia's current Kyoto Protocol emissions are considered the figures are 21.6 Mt direct and 18.8 Mt indirect for a total of 40.4 Mt. These results are shown in detail in Table 2.

Assessing and attributing the particular case of international aviation emissions is complex, largely because the 'rules' for attribution for global aviation emissions to individual economies are yet to be determined. To the present these remain outside of national Kyoto Protocol targets, but given Australia's distance from markets it is important that the magnitude of this component be examined in view of the possibility that it may be included in some future version of the international emissions regime. Some alternative approaches to measuring the extent of the components of this issue have been explored.

Expenditure Based Measures

The *Expenditure based estimates* are for the Carbon Footprint which arises from the expenditures of both non-Australian based and domestic tourists on tourism in Australia. The expenditure based estimates include air travel by visitors provided by Australian and non-Australian based airlines but exclude expenditure on outbound trips by departing Australian residents except for the part of this expenditure which relates to activities within Australia (e.g. for travel costs and hotels within Australia preceding or following an international flight); and expenditure on outbound air fares.

Using the *Expenditure approach* we estimate total (direct plus indirect) GHG emissions to be 61.5 Mt (direct emissions 29.5 Mt and indirect emissions 32.0 Mt). The Australian Kyoto Protocol emissions are calculated as 39.9 Mt with an additional 21.6 Mt emissions produced by the global activity generated by tourists to and within Australia. These results are shown

in detail in Table 3. As noted above, the international aviation components of these emissions are largely unattributed under the Kyoto Protocol. Emissions from goods and services imported into Australia are the responsibility of other countries, but would affect Australian tourism if their prices were to change due to implementation of climate change mitigation policies in supplier countries.

Table 3: Expenditure Based Carbon Footprint (GHG in Mt), 2003-04[4]

Source	Kyoto	Non-Kyoto		Total GHG (Kyoto + non-Kyoto) emissions	% share of total direct and indirect GHG emissions
	Australian Kyoto emissions	International aviation Australian airlines emissions	Foreign sourced emissions		
Direct emissions from tourism industries	10.5			10.5	17.1
Emissions from tourism-related private motor vehicle use	11.1			11.1	18.1
Emissions from international aviation- Australian	2.1		2.1	3.4	
Emissions from international aviation- non-Australian based	5.8	5.8	9.4		
Total direct GHG emissions	21.6	2.1	5.8	29.5	48.0
Indirect emissions from tourism inputs (excluding outbound aviation)	18.3			18.3	29.8
Emissions from imports		7.7	7.7	12.5	
Emissions from imports directly purchased	3.2	3.2	5.2		
Emissions from transport of imports	1.6	1.6	2.6		
Emissions from international aviation- non-Australian based	1.2	1.2	2.0		
Total indirect GHG emissions	18.3		13.7	32.0	52.0
12. Total direct and indirect GHG emissions	**39.9**	**2.1**	**19.5**	**61.5**	**100.0**

Source: Forsyth *et al*. (2008).

Comparison with 'Non-Tourism' Industries- Direct GHG Emissions

The Carbon Footprint of tourism can be compared with that of other industries (see Table A.3 located in the Appendix 4). Tourism direct emissions, that include emissions from tourism industries and household use of motor vehicles for tourism purposes, represent 3.9 per cent of the total emissions from Australian industry and households. Tourism is ranked 7th among the identified industries in terms of its emissions (Table A.3, columns two and three).

[4]Table data record the estimates of CO2 equivalent emissions in million tonnes (Mt).

Tourism direct emissions, that include emissions from tourism industries; household use of motor vehicles for tourism purposes; and Australian production of international aviation services, represent 4.7 per cent of the total emissions from Australian industry and households. If this measure is adopted Tourism moves to 6th in the industry rankings (Table A.3, columns four and five).

Tourism direct emissions, that include emissions from tourism industries; household use of motor vehicles for tourism purposes; and Australian production of international aviation services *plus* emissions by non-Australian based international airlines servicing inbound tourists, represent 5.3 per cent of the total emissions from Australian industry and households. This places tourism as the 5th ranked industry in terms of emissions (Table A.3, columns six and seven).

Users of this information need to be aware of the dangers of making comparisons with carbon emissions from other industries and against the economy as a whole, particularly as our estimates for tourism include emissions which are not included under the Kyoto Agreement and emissions which result from indirect effects of Tourism activity whereas indirect effects have not generally been factored into the estimates for other industries.

Total GHG Emissions from International Aviation

The question of assessing GHG emissions from international aviation is the most difficult component of this exercise, and the one that will inevitably strike most debate on the international stage. It is possible to view the model both with, and without international aviation emissions. Notwithstanding the temptation to do the former, aviation emissions are at present too complex to be incorporated into the Kyoto framework. Given Australia's distance from markets it is important that the magnitude of this component (and future risk)

be examined as mitigation policies to be enacted to meet the challenges of climate change may well have serious consequences for long haul travel.

GHG emissions from international aviation are summarised in Table 4 below. These are based on the expenditure estimates which allow for multiple destination trips. Total GHG emissions from international aviation (both Australian and non-Australian based) in 2003-04 was 9.9 Mt. Shares of GHG emissions are generated as follows: non-Australian based airline direct emissions 58.6 per cent; Australian airline direct emissions 21.2 per cent; non-Australian based indirect emissions 14.1 per cent; and Australian airline indirect emissions 6.1 per cent, respectively.

Table 4: Direct and Indirect GHG Emissions from International Aviation (in Mt), 2003-04

Source	**Australian airlines GHG emissions**	**Non-Australian based airlines GHG emissions**	**Total airlines GHG emissions**	**% share of total direct and indirect GHG emissions**
Direct emissions	2.1	5.8	7.9	79.8
Indirect Emissions (from indirect production in home country and imports)	0.6	1.4	2	20.2
Total direct and indirect GHG emissions	**2.7**	**7.2**	**9.9**	**100**

Source: Forsyth *et al.* (2008).

Overview of the Australian Government's Carbon Pollution Reduction Scheme

This section briefly outlines the key features of the Carbon Pollution Reduction Scheme (CPRS) as presented in the Australian Government's White Paper released in December 2008 (Australian Government, 2008).

The CPRS is a 'cap and trade' emissions trading mechanism designed to reduce Australia's emissions of greenhouse gas[5]. The cap sets a limit on the aggregate annual emissions from all the covered types and sources of emissions. The number of tradeable carbon pollution permits will be equal to the Scheme cap with the price of permits determined by the market. The government intends that the scheme will begin operating on 1 July 2010. Readers interested in a detailed description of the CPRS should consult the White Paper (Australian Government, 2008). Some key features of the proposed scheme are set out below:

Scheme coverage: emissions from stationary energy, transport, industrial processes, waste, and fugitive emissions from oil and gas production will be covered from July 2010. The Scheme excludes agriculture until 2015. The Scheme will cover around 75 per cent of Australia's GHG emissions.

Emissions threshold: entities that have facilities to generate direct emissions of 25,000 tonnes of carbon dioxide equivalent per year are subject to scheme obligation. Around 1000 entities will initially be subject to mandatory obligations under the scheme.

Emissions trajectory: to reduce Australia's greenhouse emissions by between 5 and 15 per cent below 2000 levels by 2020 and 60 per cent from 2000 levels by 2050. The 5 per cent reduction by 2020 is Australia's minimum unconditional commitment. In the context of global agreement under which all developed countries take on comparable emission reduction targets, and all major economies (including key developing countries) agree to substantially restrain emissions, Australia will reduce its emissions by up to 15 per cent below 2000 levels

[5]The Scheme will include all greenhouse gases included under the Kyoto Protocol - carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), sulphur hexafluoride (SF6), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs).

by 2020. In Table 5 Australia's national greenhouse gas inventory for 2005-06, and preliminary estimates of the likely inventory in 2006-07 and 2007-08, are presented[6].

Emissions price: to be determined by the market. The price for permits will depend on a number of factors, including the national emission trajectory, scheme coverage and international linking, and the costs of emission reduction opportunities. Australian Government (2008) modelling in estimating assistance to business and households has assumed an initial emissions price of A$25 (nominal term) a tonne of carbon dioxide equivalent (tonnes CO2-e) in 2010. A price cap (maximum price of an emissions permit) of A$40/t CO2-e, rising at 5 per cent a year, will be in place to 2014-15.

Table 5: National Greenhouse Gas Inventory, Australia, 2005-06 to 2007-08

National greenhouse gas inventory (mega tonnes)	**2005-06[a]**	**2006-07[b]**	**2007-08[b]**
Energy—combustion of fuels	366	372	377
Energy—fugitive emissions	34	35	36
Industrial processes	28	30	31
Waste	17	17	17
Agriculture	90	86	88
National inventory total[c]	**536**	**540**	**550**

(a) Actual estimates.
(b) Preliminary estimates.
(c) National Inventory excluding land use, land use change and forestry. Net emissions from the land use, land use change and forestry sector were estimated to be 40 Mt in 2006.
Source: Australian Government (2008). *Carbon Pollution Reduction Scheme: Australia's low pollution future, Vol 1,* Australian Government, Canberra, December, Table 4.1, page 4-5.

Assistance for emissions-intensive trade-exposed (EITE) industries: will be provided to new and existing industries engaged in EITE activities to reduce the risk of carbon leakage and provide transitional assistance to industries affected by Australia's adoption of a carbon constraint prior to similar action by other countries (Australian Government, 2008).

[6]Australia's greenhouse gas emissions are published each year in the National Greenhouse Gas Inventory (NGGI); and in February 2008, the Department of Climate Change (2008) also published *Tracking to the Kyoto target 2007: Australia's greenhouse emissions trends 1990 to 2008–2012 and 2020.*

Assistance, in the form of allocation of free permits, will be targeted to the most emissions intensive trade-exposed activities. Eligibility for the assistance will be linked to the production of EITE activity and the thresholds are defined in terms of emissions per million dollars revenue or emissions per million dollars of value-added. The eligibility thresholds are set out as follows in the White Paper (Australian Government, 2008):

- Activities above 2000 t CO2-e/$ million revenue or 6000 t CO2-e/$ million value-added will initially be provided permits at a rate of 90 per cent of baseline emissions. The following activities appear likely to be eligible for assistance at a 90 per cent assistance rate: aluminium smelting; cement clinker production; lime production; silicon production and integrated iron and steel manufacturing; and
- Activities between 1000 and 1999 t CO2-e/$ million revenue or 3000 and 5999 t CO2-e/$ million value-added will initially be provided permits at a rate of 60 per cent of baseline emissions. The following activities appear likely to be eligible for assistance at a 60 per cent rate: alumina refining; petroleum refining and LNG production. Additional activities that are likely to be eligible for EITE assistance may include pulp and paper manufacturing, iron and steel, plastics and chemicals, other non-ferrous metals and glass manufacturing.

The rates of assistance per unit of production will be reduced by 1.3 per cent per annum to ensure EITE industries make a contribution to the national improvement in carbon productivity over time.

***Assistance for households*:** will be provided directly to low- and middle- income households through the tax and transfer system, amounting to $9.9 billion from 2010-11 to 2011-12 to meet the higher cost of living resulting from the Scheme's introduction. Moreover, through

'cent-for-cent' fuel tax reductions, motorists will be protected from the impacts of the CPRS on fuel prices for the first three years of the scheme. For example, fuel tax adjustments will provide $4.3 billion worth of assistance from 2010-11 to 2011-12 to households; agriculture, fishing and heavy on-road transport businesses; and liquefied petroleum gas, compressed natural gas and liquefied natural gas users.

The MMRF Model, Simulation Design and the Derivation of Tourism Results

The MMRF Model

The Monash Multi-Regional Forecasting (MMRF) model, a dynamic multi-sectoral, multi-regional CGE model of the Australia economy was used for to derive the estimates in this paper. The current version of the model consists of 58 industries (see Appendix Table A.6, column 1), 63 commodities, eight state/territory regions and three primary factors of production: labour, capital and land. There are five agents in the model: industries, capital creators, households, governments and foreigners. Each region in MMRF has a single household and a regional government. There is also a federal government.

Production, consumption and investment in MMRF are modelled in accordance with conventional economic theory. The model allows interstate movements of commodities and factors of production (particularly labour) between eight regions. MMRF treats economic agents as operating in a competitive market. Producers choose their inputs to minimise the cost of producing any given level of output subject to a given production technology. Substitution is allowed between intermediate inputs and between primary factors of production, capital, labour and land. Consumers choose their goods to maximise utility subject to their budget constraints. Substitution is allowed between commodities and between sources of commodities.

The MMRF model recognises an energy and gas emission accounting module which accounts explicitly for each of the 58 industries and eight regions. The model has mechanisms that allow for inter-fuel substitution in electricity generation[1] by region.

MMRF produces results for economic variables on a year-on-year basis. It employs most of the dynamic properties of the MONASH national CGE model (Dixon and Rimmer, 2002). These include incorporation of equations relating investment to capital in year-to-year simulations, equations explaining the relationship between year-to-year capital growth and rate-of-return expectations, and equations that facilitate the running of forecasting and dynamic policy simulations into the model. A complete description including the theoretical structure of the MMRF model is provided in Adams *et al.* (2008).

The model is solved using the GEMPACK (General Equilibrium Modelling PACKage) software, developed by the Centre of Policy Studies and the Impact Project, Monash University (Harrison and Pearson, 1996).

Simulation Design[7]

Baseline Scenario Assumptions

The MMRF model uses a large amount of information from specialist forecasting organisations to generate forecasts at a level of industrial and regional detail. Some of the key data that are used to generate the baseline scenario are:

- Population projections from the Australian government's *Intergenerational Report 2007* (Australian Government, 2007);
- National real GDP growth, based on estimates from the Australian Treasury;

[7]For a more detailed discussion of the assumptions underlying the baseline and the CPRS scenarios, see Centre of Policy Studies (2008).

- National-level assumptions for changes in industry production technologies and in household preferences compiled by the Australian Treasury, in conjunction with the Centre of Policy Studies (CoPS) at Monash University;
- Estimates of the net impacts of existing energy-related measures from McLennan, Magasanik and Associates [MMA] (MMA, 2006);
- Estimates of changes in generation mix, emissions and energy use, and prices of generation, from MMA; and
- Forecasts for land used for forestry and the associated forestry sequestration from land-use experts at the Australian Bureau of Agricultural and Resource Economics (ABARE).

To accommodate this information, numerous naturally endogenous variables in the model are made exogenous. To allow such naturally endogenous variables to be exogenous, an equal number of naturally exogenous variables are made endogenous. For example, to accommodate forecasts for macro variables, various macro coefficients such as the average propensity to consume are made endogenous.

CPRS Scenario Assumptions

The CPRS policy scenario is modelled as deviations away from the baseline projection described in the previous subsection. The main differences in the domestic policy frameworks between the scenarios relate to:

- Coverage;
- Levels and coverage of shielding; and
- Scheme cap.

The key features of the CPRS are outlined in the previous section of this paper. The modelling in this paper focuses on a scenario called the CPRS – 5 as presented in the

Australia's Low Pollution Future (Australian Government, 2008). The CPRS – 5 targets are aimed at achieving greenhouse gas emissions reduction by 2020 of 5 per cent below 2000 level.

The following key assumptions are made for the macro economy in the policy scenario:

- At the national level, initially the real-wage is assumed to be sticky and so employment can deviate from its base case value in response to the emissions price but over time it is assumed that real wage adjustment steadily eliminates most of the short-run employment consequences. This labour market assumption reflects the idea that in the long-run national employment is determined by demographic factors, which are largely unaffected by the adoption of an emissions price. At the regional level, labour is assumed to be mobile between state economies;
- Consumption of regional households is determined by household disposable income. Investment is allowed to deviate from its value in the baseline scenario in line with deviations in the expected rate of return on the industry's capital stock;
- The model allows for short-run divergences in rates of return on industry capital stocks from their levels in the base-case forecast but in the long-run rates of return on capital over all regional industries return to their baseline levels;
- The budget balances as a share of nominal GDP of State and Federal governments are fixed at their values in the base case; and
- All technology variables, other than those used in the implementation of shocks, have the same values as in the Base-case projection.

Derivation of Tourism Results

In this section we explain how we derive tourism results from MMRF model simulation results. First, we derive tourism results by TSA industry from MMRF industry simulation

results. Since the industry sets provided by the TSA and MMRF model are different, the two sets must be mapped to apply the MMRF industry output change rates to the TSA industry output. The mapping between TSA and MMRF model industries is shown in Appendix 1.

In the case of industries, where we do not have one to one mapping between MMRF industry and TSA industry, we use weighted average results, for example:

> percentage change in output of Air and Water Transport = [(Total output of Air transport * percentage change in output of Air transport) + (Total output of Water transport * percentage change in output of water transport)] / [Total output of Air transport + Total output of Water transport].

Note that Air and Water Transport in the TSA data set is comprised of separate Air Transport and Water Transport industries in the MMRF data set.

We assume that the percentage change in tourism industry gross value added (TGVA) follows the percentage change in tourism industry output. We then derive change in value of TGVA by TSA industry and state by using percentage change in TGVA and value of TGVA. Similarly, we estimate the change in value of net taxes on tourism products, by tourism industry sector for the Australian eight states/territories. By adding TGVA and net taxes on tourism products we get tourism gross state product (TGSP). Tourism industry employment results are derived using the same method which is used for the derivation of TGVA results.

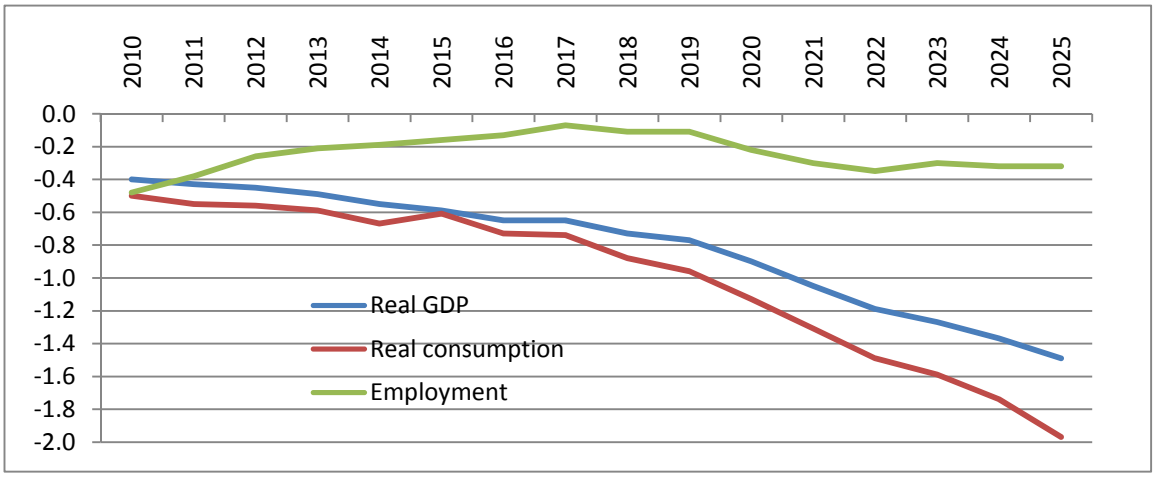
The CPRS Economic Impact: Simulation Results

Macroeconomic Results

The CPRS reduces real GDP, real consumption and employment relative to base levels. This is shown in Figure 1. Real GDP falls by 1.5 per cent relative to its baseline value in 2025. Real GDP falls because, firstly, the emissions price under the CPRS acts as a tax and thus

becomes a distortion which reduces economic efficiency and secondly, the emissions price reduces the incentive for producers to use variable factors of production - labour and capital. With less productive resources, real GDP will be lower than it otherwise would be. Less variable factors are used because the emissions price increases the real cost of these factors.

Figure 1: Australian Real GDP, Real Consumption and Employment, 2010 - 2025
(percentage deviation from base case)



Source: CGE simulation results

As shown in Figure 1, the introduction of the CPRS reduces real household consumption in 2025 by 2.0 per cent relative to its baseline value. In the CPRS simulations, the change in real consumption links to the change in real income which has as its main components: changes in income from wages and profits after income tax and disbursements from the CPRS. The simulation results reveal a fall in net real household income because the loss of real household income from labour and capital outweighs the gain of real household income from the CPRS (directly through the tax and transfer system and through the dividend income paid to shareholders from permits allocated to emissions generators).

The impacts of the CPRS on employment are relatively small. Australian national aggregate employment (wage weights) falls by 0.32 per cent relative to its baseline value in 2025 as the

real wage falls. The reduction in real wage rate strengthens producers' incentives to substitute labour for capital and consequently, the economy experiences only a small fall in employment.

The modelling results reported in this paper are consistent with Adams's (2007) findings that introducing an Emissions Trading Scheme (a Scheme similar to that of the CPRS) is likely to have a cost to the Australian economy.

The results of some key macroeconomic variables for the CPRS simulations are shown in Table A.4 located in the Appendix 4.

Sectoral Results

The results of the CPRS simulations show that output in some industries increases relative to baseline levels, while output in other industries decreases. Table A.6 located in the Appendix 4 reports percentage deviations from baseline values for national production by industries. The most favourably affected are the renewable electricity generation industries (industries 34, 36 and 37). The emissions price causes substitution toward these industries against the high-emissions coal powered electricity generation industry (industry 32). The other favourably affected industry is forestry (industry 7) because the emissions price acts as a subsidy for this industry.

The industries that experience the greatest negative effects on their output are energy and energy-intensive sectors. The most adversely affected industries by the introduction of the CPRS are the coal powered electricity generation industry (industry 32) and the aluminium industry (27), the two high-emissions industries. The main factor influencing the decline for coal powered electricity generation industry (and the electricity supply industry, industry 38) is the general reduction in electricity demand due to the increased price of electricity to end-

use customers. Aluminium is a very energy-intensive export oriented industry. The rise in electricity prices due to the introduction of the CPRS increases Aluminium production costs significantly and hence reduces its exports. Most of the remaining industries experience slight contractions in output relative to baseline values along the lines of the general shrinkage of the economy as a whole.

Tourism Industry Results

Table 6: Deviations in Real National Tourism Industry Gross Value Added in 2025

Tourism Industry	Percentage deviation from baseline	$million deviation from baseline
Travel agency and tour operator services	-0.65	-16.86
Taxi transport	-1.88	-6.67
Air and water transport	-1.02	-59.80
Motor vehicle hiring	-0.65	-8.94
Accommodation	-1.94	-69.08
Cafes, restaurants and food outlets	-1.94	-47.84
Clubs, pubs, taverns and bars	-1.94	-15.34
Other road transport	-1.88	-18.38
Rail transport	2.97	15.12
Food manufacturing	0.30	0.75
Beverage manufacturing	1.53	7.91
Transport equipment manufacturing	1.25	0.43
Other manufacturing	0.83	2.72
Automotive fuel retailing	-0.98	-1.89
Retail trade	-0.98	-30.19
Casino and gambling	-1.65	-2.36
Library museum and art	-1.65	-5.46
Other entertainment	-1.65	-5.71
Education	-0.16	-2.75
Ownership of dwelling	-0.72	-11.14
Other industries	-0.57	-19.81
Total	-0.48	-295.31

Source: Authors' calculations based on CGE simulation results and TSA industry estimates.

The CPRS reduces real tourism gross value added (GVA) relative to baseline levels. As shown in the last row of Table 6, with the CPRS in place, national real tourism GVA falls by 0.48 per cent relative to its baseline value in 2025. This is equivalent to a reduction of about

$295.3 million in today's dollars. Table 6 shows deviations (per cent and $million) from baseline values for real tourism GVA by industries nationally in 2025. The simulation results indicate that while most tourism industries experience contraction in their real value added relative to baseline values, there are some that experience expansion. The most favourably affected is the rail transport industry, real GVA of this industry (industry 9) which grows by 2.97 per cent relative to baseline values in 2025. This is because the emissions price causes substitution toward the rail transport industry against the high-emissions transport industries (air & water transport, and other road transport industry; industries 3 and 8).

Table 7: Deviations in National Tourism Industry Employment in 2025

Tourism Industry	**Percentage deviation from baseline**	**'000 persons deviation from baseline**
Travel agency and tour operator services	-0.26	-0.081
Road transport and motor vehicle hiring	-1.32	0.013
Air and water transport	-0.20	-0.032
Accommodation	-1.54	-0.569
Cafes and restaurants	-1.54	-0.409
Clubs, pubs, taverns and bars	-1.54	-0.191
Rail transport	5.48	0.011
Manufacturing	1.55	-0.051
Retail trade	-0.54	-0.13
Casino and gambling	-1.14	-0.01
Library museum and art	-1.14	-0.058
Other entertainment	-1.14	-0.08
Education	0.09	0.016
Other industries	-0.07	-0.006
Total	0.24	1.578

Source: Authors' calculations based on CGE simulation results and TSA industry estimates.

With the CPRS in place, tourism employment falls by 0.24 per cent relative to baseline levels in 2025 (see Table 7, second column and last row). This is equivalent to a reduction of about 1,578 jobs. Table 7 shows deviations (percentage and '000 person) from baseline values for tourism employment by industries nationally in 2025. Similar to the tourism GVA results,

employment in most tourism industries decreases relative to baseline levels, while employment in some industries increases.

Table 8 shows projected deviations ($ million and percentage) from baseline values for real tourism gross state product (GSP) in 2025 (see second and third rows of Table 8). Real tourism GSP falls relative to baseline values in all states/territories, except Western Australia (WA). Australian Capital Territory (ACT), Queensland (QLD) and New South Wales (NSW) are projected to experience the largest percentage declines in real tourism GSP relative to baseline levels. The 0.37 per cent fall for Victoria (VIC) is equivalent to a reduction of $55.9 million of real tourism GSP. Tasmania (TAS), Northern Territory (NT) and South Australia (SA) are projected to lose respectively, 0.33 per cent, 0.26 per cent and 0.06 per cent of their real tourism GSP in 2025. In contrast to the other states/territories, WA is expected to gain real tourism GSP (0.6 per cent). The impacts of the CPRS on real tourism GSP are heavily influenced by the changes in tourism industry output, and different industrial compositions of the states/territories.

Table 8: Real Tourism Gross State Product and Employment, 2025
(deviation from base case)

	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	AUS
Tourism GSP, GDP ($m deviation)	-135.77	-55.94	-122.01	-2.23	4.21	-5.59	-5.3	-10.65	-333.27
Tourism GSP, GDP (% deviation)	-0.56	-0.37	-0.68	-0.06	0.06	-0.33	-0.26	-0.86	-0.45
Tourism employment ('000 deviation)	-0.524	-0.284	-0.707	-0.042	0.053	-0.032	0.001	-0.043	-1.578
Tourism employment (% deviation)	-0.26	-0.21	-0.39	-0.13	0.08	-0.20	0.01	-0.46	-0.24

Source: Authors' calculations based on CGE simulation results and TSA industry estimates.

The last two rows of Table 8 show projected deviations ('000 person and percentage) from baseline values for tourism employment by state/territory in 2025. The impact of the introduction of the CPRS on state/territory tourism employment follows a similar pattern to its impact on real tourism GSP.

Conclusions

A purpose of this paper was to examine the long-run effects of the introduction of the Carbon Pollution Reduction Scheme (CPRS) on the Australian economy with a particular focus on tourism sector. The paper began with a brief presentation of the Tourism Satellite Account (TSA) based analysis of the economic contribution of tourism to Australia and its six states and two territories. The paper then provided estimates of the carbon footprint of the Australian tourism industry, which was followed by a discussion of the key features of the CPRS. The paper also provided an overview of the MMRF model used to carry out the simulations for the analysis and the key assumptions underlying the simulation scenarios. The final section of the paper dealt with analysis of the effects of the CPRS in Australia on macroeconomic indicators, sectoral output and employment as well its effect on the tourism sector.

The results of the simulations indicated that the introduction of the CPRS would reduce real GDP, real consumption and employment relative to base levels. Real GDP falls because, firstly, the emissions price under the CPRS acts as a tax and thus becomes a distortion which reduces economic efficiency. Secondly, the emissions price reduces the incentive for producers to use variable factors of production - labour and capital. With less productive resources, real GDP will be lower than it otherwise would be.

Most industries experience small contractions in output relative to baseline values in line with the general shrinkage of the economy as a whole. The industries that experienced the greatest negative effects on their output are energy and energy-intensive sectors. Prominent among the most favourably affected industries is the renewable electricity generation industry.

As for the economy as a whole, with the CPRS in place the tourism sector contracts, for example, real tourism gross value added falls. While most tourism industries experience contraction in their real value added relative to baseline values, the rail transport industry experiences an expansion because the emissions price causes substitution toward this industry against the high-emissions transport industries such as air, water and other road transport industries.

Real tourism gross state product (GSP) falls relative to baseline values in all states/territories, except Western Australia. The impacts of the CPRS on real tourism GSP are largely induced by the changes in tourism industry output and the different industrial compositions of the states/territories.

References

Adams, P.D. (2007). 'Insurance against Catastrophic Climate Change: How Much Will an Emissions Trading Scheme Cost Australia?', *The Australian Economic Review*, vol. 40, no. 4, pp.432-52.

Adams, P.D., Dixon, J., Gieseke, J. and Horridge, M.J. (2008). "MMRF: Monash Multi-Regional Forecasting Model: A Dynamic Multi-Regional Applied General Equilibrium Model of the Australian Economy", *forthcoming Working Paper*, Centre of Policy Studies, Monash University, Melbourne, June, http://www.monash.edu.au/policy/

Adams, P.D. and Parmenter, B.R. (1995). 'An applied general equilibrium analysis of the economic effects of tourism in a quite small, quite open economy', *Applied Economics*, 27, 985-994.

Australian Bureau of Statistics [ABS] (2008). *Australian National Accounts Tourism Satellite Account 2006–07*, (Cat. No. 5249.0), Canberra, http://www.abs.gov.au/

Australian Government (2008). *Carbon Pollution Reduction Scheme: Australia's low pollution future*, Australian Government, Canberra, December.

Australian Government (2007). *Intergenerational Report 2007*, Australian Government, Canberra, available at www.treasury.gov.au/igr

Berrittellaa, M., Biganoa, A., Rosona, R. And Tolg, R.S.J (2006). 'A General Equilibrium Analysis of Climate Change Impacts on Tourism', *Tourism Management*, 27, 913-924.

Blake, A., Sinclair, M.T., and Sugiyarto, G. (2001). "The Economy-Wide Effects of Foot and Mouth Disease in the UK Economy", *Tourism and Travel Research Institute Discussion Paper 2001/3*, University of Nottingham, Nottingham.

Centre of Policy Studies (2008). "Model Development and Scenario Design: MMRF Modelling to Support a Study of the Economic Impacts of Climate Change Mitigation", Consultant Report to The Australian Treasury for the report, *Australia's Low Pollution Future: The Economics of Climate Change Mitigation* released on 30 October 2008, available at http://www.treasury.gov.au/lowpollutionfuture/consultants_report/ accessed on 8 March 2009.

Department of Climate Change [DCC] (2008). *Tracking to the Kyoto Target 2007: Australia's Greenhouse Emissions Trends - 1990 to 2008-2012 and 2020*, Canberra, February, http://www.climatechange.gov.au/projections

Department of Climate Change [DCC] (2007). *National Greenhouse Gas Inventory 2005*, Canberra, available at www.greenhouse.gov.au/inventory/

Department of Climate Change [DCC] (2006). *Australian Methodology for the Estimation of Greenhouse gas Emissions and Sinks 2005: Energy (Transport)*, Canberra, available on the Internet at the following address: http://www.greenhouse.gov.au/inventory/

Dixon, P.B, and Rimmer, M.T. (2002). *Dynamic General Equilibrium Modelling for Forecasting and Policy: A Practical Guide and Documentation of MONASH*, Contributions to Economic Analysis 256, North Holland Publishing Company, Amsterdam, pp. xiv+338.

Dwyer, L., Forsyth, P. and Spurr, R. (2006). 'Assessing the Economic Impacts of Events: A Computable General Equilibrium Approach', *Journal of Travel Research*, 45, 59-66.

Dwyer, L., Forsyth, P., Spurr, R. And Ho, T.V. (2006). 'Economic effects of the world tourism crisis on Australia', *Tourism Economics*, 12(2), 171–186.

Dwyer L., Forsyth, P., Spurr, R. and Ho, T. (2005). "Measuring Tourism Productivity and Economic Yield Using TSAs and CGE Models", World Tourism Organization Conference, The Tourism Satellite Account (TSA): Understanding Tourism and Designing Strategies, Iguazu Falls, Argentine/Brazil/Paraguay, 3-6 October.

Dwyer, L., Forsyth, P., Spurr, R., and Ho, T.V. (2003). 'Contribution of tourism by origin market to a state economy: a multi-regional general equilibrium analysis', *Tourism Economics*, 9(4), 431–448.

Forsyth, P., Hoque, S., Dwyer, L., Spurr, R., Ho, T.V. and Pambudi, D. (2008). *The Carbon Footprint of Australian Tourism*, Sustainable Tourism Cooperative Research Centre, Gold Coast, Queensland http://www.crctourism.com.au/

Forsyth, P., Pambudi, D., Spurr, R., Dwyer, L., Ho, T.V. and Hoque, S. (2007). *State and Federal Taxes on Tourism in Australia: Estimates for 2003-04*, Sustainable Tourism Cooperative Research Centre, Gold Coast, Queensland http://www.crctourism.com.au/

Harrison, W. J. and Pearson, K. R. (1996). 'Computing Solutions for Large General Equilibrium Models Using GEMPACK', *Computational Economics*, 9, 83-127.

Ho, T.V., Spurr R., Pambudi, D., Forsyth, P., Dwyer, L. and Hoque, S. (2008a). *Tourism Satellite Account 2006–07* [as separate publication for] *New South Wales, Victoria, Queensland, South Australia, Western Australia, Tasmania, Northern Territory, Australian Capital Territory*, Sustainable Tourism Cooperative Research Centre, Gold Coast, Queensland, http://www.crctourism.com.au/

Ho, T.V., Spurr R., Pambudi, D., Forsyth, P., Dwyer, L. and Hoque, S. (2008b). *Tourism Satellite Account 2003-04: Summary Spreadsheets*, Sustainable Tourism Cooperative Research Centre, Gold Coast, Queensland, http://www.crctourism.com.au/

Ho, T.V, L. Dwyer, D. Pambudi, R. Spurr, P. Forsyth, and S. Hoque (2008c). *Indirect economic contribution of tourism to Australia and to Australian states and territories, 2003-04*, Sustainable Tourism Cooperative Research Centre, Gold Coast, Queensland, http://www.crctourism.com.au/

Mabugu1, R. (2002). 'Short-term effects of policy reform on tourism and the macroeconomy in Zimbabwe: applied CGE analysis', *Development Southern Africa*, 19(3), 419-430.

MMA (2006). "Impacts of a National Emissions Trading Scheme on Australia's Electricity Markets", Report prepared by Mclennan Magasanik and Associates Pty Ltd, 242 Ferrars St, South Melbourne, VIC 3205 (July).

Narayan, P.K. (2004). 'Economic impact of tourism on Fiji's economy: empirical evidence from the computable general equilibrium model', *Tourism Economics*, 10(4), 419–433.

OECD, EUROSTAT, UNWTO (2000). *Tourism Satellite Account: Recommended Methodological Framework*, Brussels/Luxemburg, Madrid, New York, Paris.

Appendix 1: Mapping between TSA and MMRF Model Industries

TSA Industry	MMRF Model Industry
Travel agency and tour operator services	Business services
Taxi transport	Road passenger transport
Air and water transport	Water transport
	Air transport
Motor vehicle hiring	Business services
Accommodation	Accommodation and hotels
Cafes, restaurants and food outlets	Accommodation and hotels
Clubs, pubs, taverns and bars	Accommodation and hotels
Other road transport	Road passenger transport
Rail transport	Rail passenger transport
Food manufacturing	Other food
	Meat products
Beverage manufacturing	Other food
Transport equipment manufacturing	Motor vehicles and parts
Other manufacturing	Textiles, clothing and footwear
	Wood products
	Paper products
	Printing
	Rubber and plastic
	Other manufacturing
Automotive fuel retailing	Trade
Retail trade	Trade
Casino and gambling	Other services
Library museum and art	Other services
Other entertainment	Other services
Education	Public services
Ownership of dwelling	Dwelling ownership
Other industries	Other manufacturing
	Communication services
	Financial services
	Business services
	Public services
	Other services

Appendix 2: Definitions of Selected Terms Used in this Paper[8]

Tourism Gross Value Added (TGVA)

Tourism gross value added measures the value of tourism gross output at basic prices by all industries which supply tourism products, less the value of the inputs used in producing these tourism products. Tourism gross value added is directly comparable with the value added of 'conventional' industries such as mining and manufacturing and should also be used for comparisons across countries or regions.

Tourism Gross Domestic Product (TGDP) or Tourism Gross State Product (TGSP)

Tourism GDP (or Tourism GSP) is tourism gross value added plus taxes paid less subsidies received on tourism related products as these are reflected in prices that visitors actually pay. Taxes on tourism products include the Goods and Services Tax (GST), wholesale taxes and excise duties on goods supplied to visitors. TGDP and TGSP will generally have a higher value than tourism value added. TGDP and TGSP are a satellite account construct to enable a direct comparison with the most widely recognised national accounting aggregates, GDP at the national level, and GSP at the state or territory level. While TGDP and TGSP can be useful in this context, tourism gross value added is normally used when making comparisons with other industries or between countries or regions.

Employed Person

An employed person is a person aged 15 years and over whom, during the reference week of the relevant Labour Force survey:

- worked for one hour or more for pay, profit, commission or payment in-kind in a job or business, or on a farm (comprising employees, employers and own account workers);
- worked for one hour or more without pay in a family business or on a farm (i.e. contributing family workers);
- were employees who had a job but were not at work and were: on paid leave; on leave without pay for less than four weeks up to the end of the reference week; stood down without pay because of bad weather or plant breakdown at their place of employment for less than four weeks up to the end of the reference week; on strike or locked out; on workers' compensation and expected to be returning to their job; or receiving wages or salary while undertaking full-time study; or
- were employers, own account workers or contributing family workers who had a job, business or farm but were not at work.

Australian International Carriers

Australian International Carriers for the year 2003-04 consist of Qantas, Australian Airlines, Pacific Blue and Jetstar.

[8] These definitions are based on the Explanatory Notes to ABS TSA, Australian National Account, 5249.0, 2005-06 (ABS, 2007), National Greenhouse Gas Inventory 2005 (DCC, 2007) and Australian Methodology for the Estimation of Greenhouse gas Emissions and Sinks 2005: Energy (Transport) (DCC, 2006), with adjustment where necessary to reflect the focus of this paper.

Greenhouse Gas (GHG) Emissions

The most common greenhouse gases are carbon dioxide, methane, nitrous oxide and the synthetic greenhouse gases [the hydrofluorocarbons (HFCs), sulphur hexafluoride and the perfluorocarbons (PFCs)]. Emissions from these gases are aggregated into carbon dioxide equivalents (CO2-e) using a factor called global warming potentials (GWPs). GWP represents the relative warming effect of a unit of mass of greenhouse gas compared with the same amount of mass of CO2 over a specific period.

International (Bunkers) Aviation

International aviation includes international air freight and passenger movements accomplished using fuel uplifted in Australia.

Mt

'Mt' is millions of metric tonnes of emissions. Technically a tonne of emissions is 1 tonne of carbon dioxide equivalent, which incorporates all of the most common greenhouse gases.

Tourism Industry

Tourism industry is as defined in the Australian Tourism Satellite Account (ATSA). ATSA classifies the tourism industry as comprising the following 'tourism characteristic' and 'tourism connected' industries.

Tourism characteristic industries
Travel agency and tour operator services
Taxi transport
Air and water transport
Motor vehicle hiring
Accommodation
Cafés, restaurants and food outlets

Tourism connected industries
Clubs, pubs, taverns and bars
Other road transport
Rail transport
Food manufacturing
Beverage manufacturing
Transport equipment manufacturing
Other manufacturing
Retail trade
Casinos and other gambling services
Libraries, museums and arts
Other entertainment services
Education
Ownership of dwellings

Appendix 3: List of Abbreviations

ABS	Australian Bureau of Statistics
ACT	Australian Capital Territory
ANZSIC	Australian and New Zealand Standard Industrial Classification
ATSA	Australian Tourism Satellite Account
AUS	Australia
A$	Australian Dollar
CEP	STCRC Centre for Economics and Policy
CGE	Computable General Equilibrium
CoPS	Centre of Policy Studies, Monash University
CO2-e	Carbon dioxide equivalent
CPRS	Carbon Pollution Reduction Scheme
DCC (/AGO)	Department of Climate Change (/formerly the Australian Greenhouse Office)
EITE	Emissions Intensive Trade Exposed
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GIVA	Gross Industry Value Added
GSP	Gross State Product
GST	Goods and Services Tax
GVA	Gross Value Added
IVS	TRA International Visitor Survey
kg/pkm	Kilogram per passenger kilometer
MMRF	Monash Multi-Regional Forecasting
Mt	Million tonnes
NSW	New South Wales
NT	Northern Territory
NVS	TRA National (domestic) Visitor Survey
OECD	Organisation for Economic Cooperation and Development
QLD	Queensland
SA	South Australia
STCRC	Sustainable Tourism Cooperative Research Centre
t	Tonne
TAS	Tasmania
TGDP	Tourism Gross Domestic Product
TGSP	Tourism Gross State Product
TGVA	Tourism Gross Value Added
TRA	Tourism Research Australia
TSA	Tourism Satellite Account
UNWTO	United Nations World Tourism Organisation
VIC	Victoria
WA	Western Australia

Appendix 4: Tables A.1-A.20

Table A.1: Tourism Gross Value Added by Industry and by State and Territory, 2006–07, $m

Tourism Industries	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	AUS
Travel agency and tour operator services	348	217	453	86	122	93	63	41	1421
Taxi transport	107	85	79	14	28	6	10	11	340
Air and water transport	2244	676	649	150	211	50	129	46	4156
Motor vehicle hiring	171	104	268	39	120	52	63	15	832
Accommodation	1522	822	1228	215	435	115	118	93	4547
Cafes, restaurants and food outlets	1024	625	812	181	280	90	62	69	3143
Clubs, pubs, taverns and bars	328	200	261	58	90	29	20	22	1008
Other road transport	338	229	155	51	82	25	61	24	965
Rail transport	199	139	97	19	82	2	4	7	549
Food manufacturing	346	244	187	54	86	30	3	3	954
Beverage manufacturing	192	170	149	134	75	13	0	0	732
Transport equipment manufacturing	80	54	23	16	14	1	2	1	190
Other manufacturing	316	330	155	48	74	28	4	3	957
Automotive fuel retailing	75	127	37	0	18	0	0	0	257
Other retail trade	1121	742	846	306	458	138	98	99	3808
Casinos and other gambling services	50	45	44	10	16	7	6	6	184
Libraries, museums and arts	126	86	132	21	32	11	8	7	422
Other entertainment services	131	90	138	22	33	11	8	7	441
Education	742	594	391	94	219	36	25	24	2124
Ownership of dwellings	839	521	379	171	182	47	19	40	2198
All other industries	982	805	647	154	317	51	73	48	3078
Total	**11280**	**6905**	**7128**	**1843**	**2973**	**836**	**776**	**566**	**32306**

Source: Ho *et al.* (2008b).

Table A.2: Tourism Employment by Industry and by State and Territory, 2006–07, ‘000

Tourism Industry	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	AUS
Travel agency and tour operator services	5.331	3.322	6.944	1.315	1.868	1.43	0.964	0.625	21.8
Road transport and motor vehicle hiring	7.912	5.378	6.116	1.417	2.368	0.895	0.967	0.446	25.5
Air and water transport	17.337	5.336	6.064	1.277	1.891	0.422	0.876	0.297	33.5
Accommodation	22.903	13.244	20.494	3.71	6.824	1.888	1.309	1.028	71.4
Cafes and restaurants	16.006	10.453	14.087	3.249	4.567	1.532	0.713	0.793	51.4
Clubs, pubs, taverns and bars	7.474	4.881	6.577	1.517	2.133	0.715	0.333	0.37	24
Rail transport	1.022	0.66	0.859	0.111	0.306	0.018	0.024	0	3
Manufacturing	10.103	8.585	6.935	2.2	2.673	1.119	0.104	0.081	31.8
Retail trade	38.16	24.332	26.911	8.27	13.232	3.68	3.005	2.51	120.1
Casinos and other gambling services	0.455	0.422	0.491	0.101	0.163	0.079	0.049	0.04	1.8
Libraries, museums and arts	2.66	1.887	3.438	0.529	0.735	0.282	0.157	0.113	9.8
Other entertainment services	3.691	2.618	4.771	0.734	1.02	0.392	0.217	0.157	13.6
Education	11.958	8.951	6.443	1.666	3.638	0.681	0.377	0.485	34.2
All other industries	12.791	12.111	8.765	1.609	4.242	0.562	0.585	0.334	41
Total tourism employed persons	**157.802**	**102.179**	**118.898**	**27.703**	**45.66**	**13.696**	**9.682**	**7.28**	**482.9**

Source: Ho *et al.* (2008b).

Table A.3: Tourism Compared to 'Non-Tourism' Economic Sector
Direct GHG Emissions, by Economic (ANZSIC) Sector, Australia, 2003-04, Mt[9]

Economic sector	Tourism (production and private motor vehicle use)		Tourism (production, private motor vehicle use and Australian based international aviation)		Tourism (production, private motor vehicle use and Australian & non-Australian based international aviation)	
	GHG emissions, Mt	Share (%)	GHG emissions, Mt	Share (%)	GHG emissions, Mt	Share (%)
1. Electricity and gas supply	194.00	35.26	194.00	34.96	194.00	34.76
2. Agriculture, forestry, fishing	130.06	23.64	130.06	23.44	130.06	23.30
3. Residential (transport)	44.50	8.09	44.50	8.02	44.50	7.97
4. Metal products	33.88	6.16	33.88	6.10	33.88	6.07
5. Tourism					**29.50**	**5.29**
6. Road transport	26.92	4.89	26.92	4.85	26.92	4.82
7. Tourism			**26.30**	**4.74**		
8. Mining	23.06	4.19	23.06	4.16	23.06	4.13
9. Tourism	**21.60**	**3.93**				
10. Petroleum, coal and chemical	18.82	3.42	18.82	3.39	18.82	3.37
11. Accommodation, cultural & personal	15.96	2.90	15.96	2.88	15.96	2.86
12. Oil and gas extraction	15.03	2.73	15.03	2.71	15.03	2.69
13. Non-metallic mineral products	10.35	1.88	10.35	1.86	10.35	1.85
14. Residential (non transport)	9.72	1.77	9.72	1.75	9.72	1.74
International air transport - Australian & non-Australian based airlines					7.90	1.42
15. Mining non-energy	5.86	1.07	5.86	1.06	5.86	1.05
16. Air transport	4.79	0.87	4.79	0.86	4.79	0.86
International air transport - Australian airlines			4.70	0.85		
17. Food, beverages, tobacco	3.50	0.64	3.50	0.63	3.50	0.63
18. Water transport	2.22	0.40	2.22	0.40	2.22	0.40
19. Wood, paper and printing	2.15	0.39	2.15	0.39	2.15	0.39
20. Railway transport	1.69	0.31	1.69	0.30	1.69	0.30
21. Government administration & defence	1.57	0.29	1.57	0.28	1.57	0.28
22. Water, sewerage and drainage	1.33	0.24	1.33	0.24	1.33	0.24
23. Other transport, services and storage	1.23	0.22	1.23	0.22	1.23	0.22
Education, health & community services	1.15	0.21	1.15	0.21	1.15	0.21
24. Wholesale and retail trade	0.86	0.16	0.86	0.15	0.86	0.15
25. Machinery and equipment	0.48	0.09	0.48	0.09	0.48	0.09
26. Communication	0.46	0.08	0.46	0.08	0.46	0.08
27. Textile, clothing, footwear & leather	0.45	0.08	0.45	0.08	0.45	0.08
28. Finance, insurance, property & business	0.20	0.04	0.20	0.04	0.20	0.04
29. Other manufacturing	0.02	0.004	0.02	0.004	0.02	0.004
Total	**550.25**	**100.00**	**554.95**	**100.00**	**558.15**	**100.00**

Source: Forsyth *et al.* (2008).

[9] Notes: 'Tourism' is not an ANZSIC economic sector and, to avoid double counting, is consequently not counted in the total. Table data record the estimates of CO2 equivalent emissions in million tonnes (Mt).

Tables A.4 – A.20: Impacts of Carbon Pollution Reduction Scheme

Table A.4: Australian Macroeconomic Variables (percentage deviation from base case)

Variable	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
1. Real household consumption	-0.50	-0.55	-0.56	-0.59	-0.67	-0.61	-0.73	-0.74	-0.88	-0.96	-1.13	-1.31	-1.49	-1.59	-1.74	-1.97
2. Real investment	-1.80	-1.70	-1.65	-1.75	-1.86	-1.51	-1.58	-1.39	-1.65	-1.70	-2.23	-2.73	-3.14	-3.24	-3.56	-3.78
3. Real state government consumption	-0.52	-0.42	-0.33	-0.30	-0.29	-0.16	-0.18	-0.12	-0.19	-0.19	-0.34	-0.44	-0.50	-0.49	-0.52	-0.58
4. Real federal government consumption	-0.49	-0.38	-0.30	-0.27	-0.27	-0.13	-0.15	-0.10	-0.17	-0.17	-0.32	-0.41	-0.46	-0.44	-0.46	-0.51
5. Export volumes	0.94	0.70	0.47	0.33	0.22	-0.54	-0.53	-0.72	-0.62	-0.62	-0.45	-0.33	-0.22	-0.28	-0.21	-0.22
6. Non-traditional export volumes	4.34	3.94	3.39	3.40	3.57	1.51	2.13	1.98	2.67	2.92	4.14	5.10	6.03	6.46	7.28	7.97
7. Tourism export volumes	0.00	-0.38	-0.74	-0.81	-0.84	-2.65	-2.55	-2.83	-2.73	-2.82	-2.47	-2.27	-2.07	-2.04	-1.92	-2.02
8. Import volumes	-1.28	-1.24	-1.18	-1.24	-1.32	-1.20	-1.29	-1.23	-1.41	-1.48	-1.86	-2.14	-2.38	-2.44	-2.63	-2.93
9. Real GDP	-0.40	-0.43	-0.45	-0.49	-0.55	-0.59	-0.65	-0.65	-0.73	-0.77	-0.90	-1.05	-1.19	-1.27	-1.37	-1.49
10. Real gross national product	-0.54	-0.57	-0.56	-0.60	-0.66	-0.53	-0.62	-0.63	-0.76	-0.82	-1.01	-1.21	-1.38	-1.48	-1.64	-1.85
11. Employment (wage weights)	-0.48	-0.38	-0.26	-0.21	-0.19	-0.16	-0.13	-0.07	-0.11	-0.11	-0.22	-0.30	-0.35	-0.30	-0.32	-0.32
12. Capital stock	-0.03	-0.17	-0.29	-0.42	-0.52	-0.61	-0.67	-0.73	-0.77	-0.83	-0.90	-1.01	-1.14	-1.29	-1.44	-1.60
13. Real wage index	-0.43	-0.78	-1.02	-1.21	-1.38	-1.53	-1.65	-1.71	-1.81	-1.92	-2.12	-2.39	-2.70	-2.97	-3.26	-3.55
14. GDP deflator	-0.20	-0.24	-0.28	-0.31	-0.33	-0.25	-0.26	-0.27	-0.29	-0.31	-0.43	-0.47	-0.52	-0.55	-0.60	-0.68
15. Consumer price index	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16. Terms of trade	-0.61	-0.64	-0.59	-0.58	-0.53	0.20	0.14	0.14	0.08	0.05	-0.33	-0.42	-0.52	-0.60	-0.72	-0.99
17. Real exchange rate	0.75	0.59	0.43	0.40	0.40	-0.06	0.08	0.07	0.21	0.26	0.43	0.57	0.68	0.72	0.82	0.94

Source: CGE simulation results.

Table A.5: State GDP Outcomes (percentage deviation from base case)

State	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
1. NSW	-0.51	-0.52	-0.56	-0.64	-0.72	-0.8	-0.81	-0.74	-0.81	-0.86	-0.99	-1.15	-1.33	-1.41	-1.57	-1.70
2. VIC	-0.41	-0.55	-0.57	-0.63	-0.68	-0.79	-0.88	-0.93	-1.03	-1.04	-1.16	-1.34	-1.44	-1.45	-1.50	-1.56
3. QLD	-0.48	-0.63	-0.66	-0.70	-0.83	-0.79	-0.88	-0.92	-1.07	-1.18	-1.41	-1.60	-1.83	-1.99	-2.21	-2.43
4. SA	-0.50	-0.43	-0.40	-0.39	-0.38	-0.47	-0.48	-0.37	-0.36	-0.29	-0.31	-0.38	-0.43	-0.42	-0.40	-0.36
5. WA	0.07	0.15	0.17	0.21	0.17	0.20	0.11	0.04	-0.02	-0.01	-0.07	-0.12	-0.16	-0.27	-0.30	-0.42
6. TAS	-0.66	-0.18	0.03	0.21	0.41	0.35	0.29	0.37	0.23	0.25	0.18	-0.01	-0.29	-0.42	-0.53	-0.62
7. NT	-0.01	0.05	0.08	0.09	0.06	0.32	0.20	0.07	-0.04	-0.09	-0.20	-0.32	-0.40	-0.55	-0.63	-0.71
8. ACT	-0.69	-0.67	-0.65	-0.68	-0.72	-0.77	-0.82	-0.78	-0.89	-0.93	-1.07	-1.22	-1.34	-1.36	-1.45	-1.55

Source: CGE simulation results.

Table A.6: Australian Industry Output
(percentage deviation from base case)

MMRF Industry	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
1. SheepCattle	0.19	0.24	0.25	0.30	0.33	-0.72	-1.30	-1.74	-2.08	-2.33	-2.86	-3.31	-3.75	-4.22	-4.71	-4.25
2. Dairy	0.29	0.28	0.32	0.39	0.45	0.16	0.14	0.09	0.12	0.14	0.21	0.28	0.34	0.39	0.47	0.91
3. OtherAnimal	0.42	0.40	0.43	0.50	0.55	-0.31	-0.32	-0.35	-0.32	-0.30	-0.11	0.14	0.41	0.71	1.05	1.93
4. Grains	0.20	0.23	0.23	0.26	0.27	0.52	0.53	0.54	0.58	0.64	0.92	1.11	1.32	1.50	1.75	1.45
5. OtherAg	-0.11	-0.11	-0.12	-0.10	-0.10	0.20	0.22	0.24	0.28	0.33	0.56	0.71	0.87	1.02	1.22	0.89
6. AgServFish	0.68	0.74	0.82	0.91	1.01	0.55	0.59	0.57	0.65	0.69	1.00	1.20	1.39	1.55	1.72	1.56
7. Forestry	10.27	11.43	13.96	16.95	19.77	21.94	24.58	27.59	30.57	34.44	37.90	40.51	43.26	45.70	50.61	53.13
8. Coal	-0.68	-1.40	-2.18	-3.07	-4.02	-4.34	-4.64	-4.87	-5.20	-5.48	-6.22	-6.95	-7.66	-8.34	-9.13	-9.99
9. Oil	-0.02	-0.03	-0.05	-0.06	-0.07	-0.10	-0.10	-0.11	-0.11	-0.12	-0.14	-0.15	-0.15	-0.15	-0.15	-0.16
10. Gas	-0.13	-0.44	-0.54	-0.79	-1.11	-1.45	-1.85	-2.17	-2.40	-2.69	-2.89	-3.19	-3.44	-3.72	-4.08	-4.30
11. IronOre	0.07	0.21	0.33	0.43	0.51	0.65	0.86	1.03	1.19	1.34	1.49	1.65	1.82	1.98	2.13	2.29
12. NonIronOre	-0.17	-0.17	-0.25	-0.39	-0.62	-0.71	-0.83	-0.92	-1.04	-1.16	-1.28	-1.41	-1.49	-1.53	-1.61	-1.57
13. OtherMining	0.20	0.25	0.21	0.13	0.03	0.23	0.30	0.29	0.33	0.35	0.33	0.38	0.43	0.42	0.43	0.47
14. MeatProds	0.42	0.40	0.43	0.50	0.55	-0.35	-0.57	-0.76	-0.90	-1.01	-1.15	-1.51	-1.89	-2.26	-2.67	-3.00
15. OtherFood	0.26	0.23	0.28	0.35	0.40	0.17	0.20	0.17	0.22	0.25	0.40	0.53	0.68	0.82	1.00	1.53
16. TCF	0.58	0.54	0.58	0.71	0.82	0.30	0.39	0.34	0.49	0.55	0.77	0.91	1.06	1.18	1.34	1.43
17. WoodProds	0.41	0.49	0.62	0.79	0.96	0.93	1.15	1.37	1.57	1.80	2.03	2.22	2.43	2.69	2.99	3.35
18. PaperProds	0.38	0.38	0.44	0.54	0.61	0.46	0.52	0.51	0.60	0.66	0.73	0.74	0.73	0.75	0.76	0.95
19. Printing	-0.18	-0.17	-0.13	-0.10	-0.09	-0.16	-0.14	-0.12	-0.11	-0.11	-0.09	-0.09	-0.08	-0.03	0.00	0.04
20. Refinery	-1.21	-1.63	-2.20	-2.88	-3.51	-3.26	-3.69	-4.15	-4.60	-5.08	-6.61	-7.27	-7.69	-8.04	-8.30	-10.73
21. Chemicals	0.70	0.66	0.51	0.38	0.24	0.17	0.18	0.14	0.14	0.09	0.17	0.13	0.11	0.19	0.20	0.50
22. RubbPlastic	0.09	0.06	-0.02	-0.07	-0.12	-0.16	-0.13	-0.09	-0.10	-0.10	0.00	0.01	0.05	0.17	0.28	0.56
23. NonMetalCon	-0.29	-0.41	-0.41	-0.42	-0.44	-0.41	-0.34	-0.35	-0.30	-0.33	-0.30	-0.25	-0.20	-0.08	0.00	0.28
24. Cement	-0.64	-0.88	-0.89	-0.93	-1.05	-0.90	-0.93	-1.00	-1.07	-1.17	-1.54	-1.93	-2.34	-2.63	-3.04	-3.28
25. Steel	0.40	0.29	0.27	0.25	0.18	-0.02	0.05	0.05	0.10	0.11	-0.20	-0.42	-0.67	-0.82	-1.06	-0.50
26. Alumina	-0.43	-0.81	-1.03	-1.22	-1.51	-1.89	-2.24	-2.65	-3.06	-3.43	-3.84	-4.34	-4.86	-5.44	-6.14	-6.66
27. Aluminium	-3.53	-3.53	-3.69	-4.29	-5.04	-5.86	-6.62	-6.52	-7.52	-8.22	-10.11	-13.88	-18.95	-24.10	-30.10	-34.49
28. OtherMetals	0.15	0.15	0.22	0.34	0.33	-0.48	-0.40	-0.54	-0.36	-0.37	0.19	1.17	2.13	3.22	4.33	6.96
29. MetalProds	-0.38	-0.44	-0.44	-0.45	-0.50	-0.65	-0.61	-0.56	-0.59	-0.61	-0.78	-1.07	-1.40	-1.61	-1.94	-2.10
30. MVandParts	-0.03	0.00	0.08	0.06	0.10	-0.11	-0.05	0.03	0.15	0.25	0.43	0.52	0.61	0.81	0.97	1.25
31. OtherMan	-0.62	-0.57	-0.42	-0.31	-0.22	-0.44	-0.25	-0.05	0.03	0.14	0.22	0.19	0.19	0.33	0.41	0.66

32. ElecCoal	-9.07	-14.35	-16.08	-17.76	-20.38	-21.63	-23.96	-26.20	-27.43	-28.08	-30.51	-32.88	-34.85	-35.40	-36.81	-38.36
33. ElecGas	-5.82	0.11	-0.44	-3.22	-1.74	-6.26	-6.04	0.03	-2.71	-1.06	2.49	1.54	4.31	3.04	1.63	3.94
34. ElecOil	-1.46	1.82	4.70	7.56	9.79	11.88	13.15	14.91	15.52	16.82	17.86	18.43	19.13	20.22	21.16	22.08
35. ElecNuclear	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36. ElecHydro	-8.83	-11.53	-7.28	1.56	2.19	3.46	1.85	3.92	2.19	3.30	3.58	3.28	1.23	0.14	0.87	2.73
37. ElecOther	18.39	76.62	103.66	114.85	145.56	184.76	219.75	236.74	258.14	270.11	269.82	268.98	263.23	263.55	268.08	269.85
38. ElecSupply	-7.62	-7.88	-7.93	-8.25	-8.78	-8.91	-8.60	-6.94	-7.55	-7.50	-8.47	-10.38	-12.28	-13.00	-14.38	-15.10
39. GasSupply	-0.59	-0.56	-0.57	-1.04	-1.19	-1.63	-1.97	-1.63	-1.87	-1.82	-1.64	-1.87	-1.78	-2.00	-2.31	-2.12
40. WaterSupply	-0.52	-0.53	-0.53	-0.56	-0.60	-0.62	-0.64	-0.56	-0.65	-0.67	-0.78	-0.93	-1.08	-1.11	-1.21	-1.29
41. Construction	-0.97	-1.05	-1.15	-1.27	-1.40	-1.20	-1.25	-1.19	-1.36	-1.42	-1.75	-2.05	-2.33	-2.49	-2.73	-3.02
42. Trade	-0.48	-0.46	-0.41	-0.41	-0.42	-0.42	-0.44	-0.40	-0.46	-0.48	-0.61	-0.73	-0.83	-0.85	-0.93	-0.98
43. AccomHotels	-0.57	-0.61	-0.58	-0.59	-0.65	-0.79	-0.91	-0.97	-1.11	-1.21	-1.32	-1.47	-1.59	-1.64	-1.74	-1.94
44. RoadPass	-0.39	-0.45	-0.48	-0.57	-0.66	-1.00	-1.09	-1.22	-1.32	-1.42	-1.48	-1.56	-1.62	-1.67	-1.74	-1.88
45. RoadFreight	0.04	0.00	-0.01	-0.02	-0.04	-0.20	-0.20	-0.23	-0.23	-0.23	-0.23	-0.24	-0.25	-0.26	-0.25	-0.30
46. RailPass	0.54	0.40	0.46	0.63	0.81	0.20	0.41	0.39	0.65	0.77	1.28	1.69	2.09	2.29	2.66	2.97
47. RailFreight	-0.07	-0.21	-0.29	-0.38	-0.49	-0.69	-0.64	-0.65	-0.59	-0.56	-0.52	-0.49	-0.45	-0.45	-0.42	-0.40
48. WaterTrans	-0.14	-0.14	-0.16	-0.20	-0.26	-0.33	-0.36	-0.35	-0.40	-0.43	-0.48	-0.57	-0.64	-0.67	-0.73	-0.76
49. AirTrans	-0.21	-0.27	-0.34	-0.38	-0.44	-1.23	-1.29	-1.47	-1.54	-1.65	-1.53	-1.54	-1.52	-1.54	-1.53	-1.56
50. Commun	-0.33	-0.35	-0.34	-0.36	-0.39	-0.37	-0.41	-0.41	-0.48	-0.52	-0.62	-0.73	-0.83	-0.89	-0.98	-1.09
51. FinServ	-0.21	-0.21	-0.19	-0.19	-0.20	-0.23	-0.24	-0.23	-0.26	-0.27	-0.31	-0.34	-0.38	-0.39	-0.41	-0.46
52. BusServ	-0.40	-0.39	-0.33	-0.32	-0.32	-0.36	-0.35	-0.32	-0.35	-0.36	-0.43	-0.50	-0.56	-0.57	-0.61	-0.65
53. Dwelling	-0.01	-0.02	-0.05	-0.08	-0.11	-0.14	-0.17	-0.21	-0.26	-0.30	-0.36	-0.41	-0.48	-0.55	-0.63	-0.72
54. PubServ	-0.38	-0.28	-0.19	-0.14	-0.12	-0.03	-0.04	0.00	-0.05	-0.05	-0.13	-0.17	-0.19	-0.14	-0.13	-0.16
55. OthServ	-0.63	-0.62	-0.58	-0.59	-0.65	-0.56	-0.67	-0.66	-0.80	-0.87	-1.03	-1.19	-1.33	-1.37	-1.48	-1.65
56. PrivTran	0.06	-0.04	-0.10	-0.12	-0.20	-0.32	-0.39	-0.49	-0.59	-0.69	-0.81	-0.91	-1.04	-1.18	-1.31	-1.47
57. PrivElec	-2.31	-3.31	-4.08	-4.78	-5.38	-5.81	-6.07	-5.83	-6.10	-6.24	-6.66	-7.44	-8.35	-8.92	-9.61	-10.17
58. PrivHeat	-1.87	-2.57	-3.01	-3.36	-3.66	-3.82	-3.87	-3.62	-3.81	-3.89	-4.21	-4.79	-5.44	-5.78	-6.21	-6.54

Source: CGE simulation results.

Table A.7: Tourism Industry Outputs, Australia
(percentage deviation from base case)

Tourism Industry	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
1. Travel agency and tour operator services	-0.40	-0.39	-0.33	-0.32	-0.32	-0.36	-0.35	-0.32	-0.35	-0.36	-0.43	-0.50	-0.56	-0.57	-0.61	-0.65
2. Taxi transport	-0.39	-0.45	-0.48	-0.57	-0.66	-1.00	-1.09	-1.22	-1.32	-1.42	-1.48	-1.56	-1.62	-1.67	-1.74	-1.88
3. Air and water transport	-0.16	-0.18	-0.22	-0.26	-0.32	-0.62	-0.66	-0.71	-0.76	-0.82	-0.82	-0.88	-0.92	-0.95	-0.99	-1.02
4. Motor vehicle hiring	-0.40	-0.39	-0.33	-0.32	-0.32	-0.36	-0.35	-0.32	-0.35	-0.36	-0.43	-0.50	-0.56	-0.57	-0.61	-0.65
5. Accommodation	-0.57	-0.61	-0.58	-0.59	-0.65	-0.79	-0.91	-0.97	-1.11	-1.21	-1.32	-1.47	-1.59	-1.64	-1.74	-1.94
6. Cafes, restaurants and food outlets	-0.57	-0.61	-0.58	-0.59	-0.65	-0.79	-0.91	-0.97	-1.11	-1.21	-1.32	-1.47	-1.59	-1.64	-1.74	-1.94
7. Clubs, pubs, taverns and bars	-0.57	-0.61	-0.58	-0.59	-0.65	-0.79	-0.91	-0.97	-1.11	-1.21	-1.32	-1.47	-1.59	-1.64	-1.74	-1.94
8. Other road transport	-0.39	-0.45	-0.48	-0.57	-0.66	-1.00	-1.09	-1.22	-1.32	-1.42	-1.48	-1.56	-1.62	-1.67	-1.74	-1.88
9. Rail transport	0.54	0.40	0.46	0.63	0.81	0.20	0.41	0.39	0.65	0.77	1.28	1.69	2.09	2.29	2.66	2.97
10. Food manufacturing	0.30	0.28	0.32	0.39	0.44	0.03	-0.01	-0.08	-0.08	-0.09	-0.02	-0.02	-0.02	-0.02	0.00	0.30
11. Beverage manufacturing	0.26	0.23	0.28	0.35	0.40	0.17	0.20	0.17	0.22	0.25	0.40	0.53	0.68	0.82	1.00	1.53
12. Transport equipment manufacturing	-0.03	0.00	0.08	0.06	0.10	-0.11	-0.05	0.03	0.15	0.25	0.43	0.52	0.61	0.81	0.97	1.25
13. Other manufacturing	-0.21	-0.18	-0.09	-0.01	0.06	-0.12	0.00	0.12	0.19	0.27	0.36	0.38	0.41	0.53	0.62	0.83
14. Automotive fuel retailing	-0.48	-0.46	-0.41	-0.41	-0.42	-0.42	-0.44	-0.40	-0.46	-0.48	-0.61	-0.73	-0.83	-0.85	-0.93	-0.98
15. Retail trade	-0.48	-0.46	-0.41	-0.41	-0.42	-0.42	-0.44	-0.40	-0.46	-0.48	-0.61	-0.73	-0.83	-0.85	-0.93	-0.98
16. Casino and gambling	-0.63	-0.62	-0.58	-0.59	-0.65	-0.56	-0.67	-0.66	-0.80	-0.87	-1.03	-1.19	-1.33	-1.37	-1.48	-1.65
17. Library museum and art	-0.63	-0.62	-0.58	-0.59	-0.65	-0.56	-0.67	-0.66	-0.80	-0.87	-1.03	-1.19	-1.33	-1.37	-1.48	-1.65
18. Other entertainment	-0.63	-0.62	-0.58	-0.59	-0.65	-0.56	-0.67	-0.66	-0.80	-0.87	-1.03	-1.19	-1.33	-1.37	-1.48	-1.65
19. Education	-0.38	-0.28	-0.19	-0.14	-0.12	-0.03	-0.04	0.00	-0.05	-0.05	-0.13	-0.17	-0.19	-0.14	-0.13	-0.16
20. Ownership of dwelling	-0.01	-0.02	-0.05	-0.08	-0.11	-0.14	-0.17	-0.21	-0.26	-0.30	-0.36	-0.41	-0.48	-0.55	-0.63	-0.72
21. Other industries	-0.43	-0.40	-0.33	-0.31	-0.31	-0.32	-0.32	-0.28	-0.32	-0.32	-0.39	-0.46	-0.52	-0.51	-0.54	-0.57

Source: CGE simulation results.

Table A.8: Tourism Industry Employment, Australia
(percentage deviation from base case)

Tourism Industry	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
1. Travel agency and tour operator services	-0.55	-0.44	-0.28	-0.21	-0.17	-0.20	-0.15	-0.09	-0.11	-0.11	-0.19	-0.26	-0.29	-0.25	-0.26	-0.26
2. Road transport and motor vehicle hiring	-0.62	-0.58	-0.53	-0.61	-0.67	-1.00	-1.04	-1.10	-1.14	-1.17	-1.15	-1.17	-1.22	-1.22	-1.24	-1.32
3. Air and water transport	-0.07	-0.07	-0.07	-0.08	-0.10	-0.48	-0.43	-0.42	-0.41	-0.41	-0.34	-0.36	-0.34	-0.30	-0.27	-0.20
4. Accommodation	-0.72	-0.69	-0.58	-0.53	-0.56	-0.71	-0.81	-0.85	-0.97	-1.04	-1.13	-1.24	-1.31	-1.31	-1.35	-1.54
5. Cafés and restaurants	-0.72	-0.69	-0.58	-0.53	-0.56	-0.71	-0.81	-0.85	-0.97	-1.04	-1.13	-1.24	-1.31	-1.31	-1.35	-1.54
6. Clubs, pubs, taverns and bars	-0.72	-0.69	-0.58	-0.53	-0.56	-0.71	-0.81	-0.85	-0.97	-1.04	-1.13	-1.24	-1.31	-1.31	-1.35	-1.54
7. Rail transport	1.41	1.08	1.20	1.51	1.83	0.54	1.10	1.04	1.66	1.86	2.90	3.64	4.28	4.44	5.04	5.48
8. Manufacturing	0.04	0.07	0.20	0.33	0.43	0.09	0.24	0.33	0.44	0.53	0.69	0.75	0.84	1.00	1.16	1.55
9. Retail trade	-0.64	-0.51	-0.36	-0.31	-0.28	-0.25	-0.24	-0.16	-0.22	-0.22	-0.37	-0.48	-0.56	-0.50	-0.54	-0.54
10. Casinos and other gambling services	-0.65	-0.57	-0.46	-0.42	-0.43	-0.27	-0.37	-0.33	-0.46	-0.51	-0.66	-0.80	-0.91	-0.91	-0.98	-1.14
11. Libraries, museums and arts	-0.65	-0.57	-0.46	-0.42	-0.43	-0.27	-0.37	-0.33	-0.46	-0.51	-0.66	-0.80	-0.91	-0.91	-0.98	-1.14
12. Other entertainment services	-0.65	-0.57	-0.46	-0.42	-0.43	-0.27	-0.37	-0.33	-0.46	-0.51	-0.66	-0.80	-0.91	-0.91	-0.98	-1.14
13. Education	-0.36	-0.24	-0.12	-0.06	-0.02	0.09	0.08	0.13	0.08	0.09	0.01	-0.01	0.00	0.07	0.10	0.09
14. All other industries	-0.48	-0.36	-0.22	-0.14	-0.11	-0.06	-0.04	0.02	-0.02	-0.01	-0.09	-0.13	-0.15	-0.08	-0.07	-0.07

Source: CGE simulation results.

Table A.9: Tourism Industry Outputs, New South Wales
(percentage deviation from base case)

Tourism Industry	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
1. Travel agency and tour operator services	-0.47	-0.46	-0.41	-0.41	-0.42	-0.48	-0.47	-0.43	-0.47	-0.48	-0.56	-0.66	-0.73	-0.74	-0.79	-0.83
2. Taxi transport	-0.47	-0.52	-0.56	-0.67	-0.76	-1.10	-1.20	-1.30	-1.42	-1.53	-1.62	-1.72	-1.81	-1.86	-1.95	-2.10
3. Air and water transport	-0.23	-0.27	-0.34	-0.40	-0.48	-0.87	-0.92	-0.98	-1.05	-1.12	-1.13	-1.21	-1.26	-1.29	-1.33	-1.37
4. Motor vehicle hiring	-0.47	-0.46	-0.41	-0.41	-0.42	-0.48	-0.47	-0.43	-0.47	-0.48	-0.56	-0.66	-0.73	-0.74	-0.79	-0.83
5. Accommodation	-0.65	-0.65	-0.64	-0.69	-0.75	-0.99	-1.10	-1.15	-1.29	-1.40	-1.52	-1.68	-1.82	-1.88	-1.99	-2.19
6. Cafes, restaurants and food outlets	-0.65	-0.65	-0.64	-0.69	-0.75	-0.99	-1.10	-1.15	-1.29	-1.40	-1.52	-1.68	-1.82	-1.88	-1.99	-2.19
7. Clubs, pubs, taverns and bars	-0.65	-0.65	-0.64	-0.69	-0.75	-0.99	-1.10	-1.15	-1.29	-1.40	-1.52	-1.68	-1.82	-1.88	-1.99	-2.19
8. Other road transport	-0.47	-0.52	-0.56	-0.67	-0.76	-1.10	-1.20	-1.30	-1.42	-1.53	-1.62	-1.72	-1.81	-1.86	-1.95	-2.10
9. Rail transport	0.58	0.45	0.50	0.67	0.87	0.26	0.50	0.50	0.78	0.92	1.47	1.92	2.35	2.59	3.00	3.36
10. Food manufacturing	0.15	0.12	0.13	0.16	0.19	-0.20	-0.25	-0.33	-0.36	-0.39	-0.36	-0.40	-0.44	-0.47	-0.49	-0.28
11. Beverage manufacturing	0.11	0.07	0.08	0.11	0.14	-0.08	-0.07	-0.10	-0.08	-0.07	0.04	0.13	0.22	0.33	0.47	0.91
12. Transport equipment manufacturing	-0.25	-0.18	-0.13	-0.21	-0.21	-0.43	-0.44	-0.39	-0.37	-0.32	-0.30	-0.37	-0.45	-0.36	-0.39	-0.26
13. Other manufacturing	-0.30	-0.30	-0.23	-0.16	-0.08	-0.33	-0.19	-0.07	0.01	0.08	0.18	0.19	0.21	0.32	0.40	0.60
14. Automotive fuel retailing	-0.59	-0.58	-0.55	-0.59	-0.60	-0.67	-0.68	-0.64	-0.70	-0.74	-0.89	-1.05	-1.19	-1.22	-1.33	-1.42
15. Retail trade	-0.59	-0.58	-0.55	-0.59	-0.60	-0.67	-0.68	-0.64	-0.70	-0.74	-0.89	-1.05	-1.19	-1.22	-1.33	-1.42
16. Casino and gambling	-0.67	-0.63	-0.60	-0.64	-0.69	-0.70	-0.78	-0.75	-0.89	-0.96	-1.12	-1.30	-1.47	-1.50	-1.63	-1.80
17. Library museum and art	-0.67	-0.63	-0.60	-0.64	-0.69	-0.70	-0.78	-0.75	-0.89	-0.96	-1.12	-1.30	-1.47	-1.50	-1.63	-1.80
18. Other entertainment	-0.67	-0.63	-0.60	-0.64	-0.69	-0.70	-0.78	-0.75	-0.89	-0.96	-1.12	-1.30	-1.47	-1.50	-1.63	-1.80
19. Education	-0.48	-0.37	-0.28	-0.26	-0.24	-0.20	-0.18	-0.09	-0.14	-0.15	-0.23	-0.30	-0.35	-0.31	-0.33	-0.37
20. Ownership of dwelling	-0.01	-0.02	-0.05	-0.07	-0.11	-0.14	-0.19	-0.25	-0.30	-0.36	-0.43	-0.50	-0.57	-0.66	-0.75	-0.85
21. Other industries	-0.48	-0.45	-0.40	-0.39	-0.39	-0.44	-0.42	-0.36	-0.40	-0.41	-0.48	-0.57	-0.64	-0.63	-0.68	-0.70

Source: CGE simulation results.

Table A.10: Tourism Industry Outputs, Victoria
(percentage deviation from base case)

Tourism Industry	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
1. Travel agency and tour operator services	-0.47	-0.46	-0.39	-0.38	-0.37	-0.42	-0.41	-0.35	-0.39	-0.38	-0.45	-0.52	-0.57	-0.55	-0.56	-0.57
2. Taxi transport	-0.43	-0.51	-0.55	-0.65	-0.74	-1.13	-1.23	-1.36	-1.46	-1.56	-1.61	-1.68	-1.73	-1.76	-1.81	-1.94
3. Air and water transport	-0.17	-0.19	-0.21	-0.25	-0.27	-0.57	-0.59	-0.61	-0.65	-0.67	-0.65	-0.69	-0.70	-0.68	-0.67	-0.63
4. Motor vehicle hiring	-0.47	-0.46	-0.39	-0.38	-0.37	-0.42	-0.41	-0.35	-0.39	-0.38	-0.45	-0.52	-0.57	-0.55	-0.56	-0.57
5. Accommodation	-0.63	-0.71	-0.72	-0.76	-0.82	-1.04	-1.16	-1.22	-1.36	-1.43	-1.55	-1.70	-1.80	-1.83	-1.91	-2.07
6. Cafes, restaurants and food outlets	-0.63	-0.71	-0.72	-0.76	-0.82	-1.04	-1.16	-1.22	-1.36	-1.43	-1.55	-1.70	-1.80	-1.83	-1.91	-2.07
7. Clubs, pubs, taverns and bars	-0.63	-0.71	-0.72	-0.76	-0.82	-1.04	-1.16	-1.22	-1.36	-1.43	-1.55	-1.70	-1.80	-1.83	-1.91	-2.07
8. Other road transport	-0.43	-0.51	-0.55	-0.65	-0.74	-1.13	-1.23	-1.36	-1.46	-1.56	-1.61	-1.68	-1.73	-1.76	-1.81	-1.94
9. Rail transport	0.30	0.18	0.22	0.33	0.45	-0.04	0.16	0.16	0.37	0.44	0.81	1.06	1.28	1.35	1.57	1.72
10. Food manufacturing	0.33	0.34	0.37	0.44	0.51	0.13	0.10	0.05	0.06	0.08	0.17	0.19	0.22	0.24	0.27	0.65
11. Beverage manufacturing	0.30	0.31	0.34	0.41	0.48	0.23	0.23	0.20	0.24	0.28	0.40	0.51	0.62	0.72	0.85	1.37
12. Transport equipment manufacturing	-0.09	-0.06	0.01	-0.02	0.02	-0.18	-0.12	-0.01	0.09	0.20	0.41	0.49	0.60	0.83	1.02	1.32
13. Other manufacturing	-0.13	-0.07	0.03	0.12	0.21	-0.02	0.10	0.22	0.29	0.39	0.51	0.54	0.61	0.76	0.90	1.13
14. Automotive fuel retailing	-0.41	-0.39	-0.32	-0.32	-0.30	-0.44	-0.45	-0.40	-0.45	-0.45	-0.51	-0.59	-0.64	-0.59	-0.59	-0.56
15. Retail trade	-0.41	-0.39	-0.32	-0.32	-0.30	-0.44	-0.45	-0.40	-0.45	-0.45	-0.51	-0.59	-0.64	-0.59	-0.59	-0.56
16. Casino and gambling	-0.72	-0.76	-0.76	-0.80	-0.86	-0.87	-0.99	-1.00	-1.15	-1.21	-1.38	-1.56	-1.69	-1.71	-1.79	-1.95
17. Library museum and art	-0.72	-0.76	-0.76	-0.80	-0.86	-0.87	-0.99	-1.00	-1.15	-1.21	-1.38	-1.56	-1.69	-1.71	-1.79	-1.95
18. Other entertainment	-0.72	-0.76	-0.76	-0.80	-0.86	-0.87	-0.99	-1.00	-1.15	-1.21	-1.38	-1.56	-1.69	-1.71	-1.79	-1.95
19. Education	-0.38	-0.32	-0.23	-0.19	-0.17	-0.19	-0.22	-0.20	-0.26	-0.25	-0.31	-0.35	-0.33	-0.25	-0.20	-0.20
20. Ownership of dwelling	-0.01	-0.04	-0.08	-0.13	-0.19	-0.25	-0.31	-0.38	-0.45	-0.52	-0.60	-0.68	-0.77	-0.87	-0.97	-1.08
21. Other industries	-0.48	-0.46	-0.40	-0.38	-0.37	-0.44	-0.44	-0.39	-0.43	-0.43	-0.49	-0.56	-0.61	-0.57	-0.58	-0.59

Source: CGE simulation results.

Table A.11: Tourism Industry Outputs, Queensland
(percentage deviation from base case)

Tourism Industry	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
1. Travel agency and tour operator services	-0.37	-0.44	-0.40	-0.41	-0.46	-0.50	-0.51	-0.52	-0.57	-0.61	-0.72	-0.83	-0.95	-1.02	-1.14	-1.25
2. Taxi transport	-0.34	-0.48	-0.50	-0.58	-0.71	-1.00	-1.11	-1.26	-1.36	-1.50	-1.58	-1.67	-1.77	-1.86	-1.99	-2.18
3. Air and water transport	-0.22	-0.30	-0.33	-0.39	-0.49	-0.76	-0.81	-0.86	-0.93	-1.00	-1.04	-1.16	-1.26	-1.35	-1.46	-1.55
4. Motor vehicle hiring	-0.37	-0.44	-0.40	-0.41	-0.46	-0.50	-0.51	-0.52	-0.57	-0.61	-0.72	-0.83	-0.95	-1.02	-1.14	-1.25
5. Accommodation	-0.43	-0.60	-0.47	-0.41	-0.49	-0.53	-0.66	-0.78	-0.91	-1.05	-1.21	-1.35	-1.50	-1.57	-1.70	-1.96
6. Cafes, restaurants and food outlets	-0.43	-0.60	-0.47	-0.41	-0.49	-0.53	-0.66	-0.78	-0.91	-1.05	-1.21	-1.35	-1.50	-1.57	-1.70	-1.96
7. Clubs, pubs, taverns and bars	-0.43	-0.60	-0.47	-0.41	-0.49	-0.53	-0.66	-0.78	-0.91	-1.05	-1.21	-1.35	-1.50	-1.57	-1.70	-1.96
8. Other road transport	-0.34	-0.48	-0.50	-0.58	-0.71	-1.00	-1.11	-1.26	-1.36	-1.50	-1.58	-1.67	-1.77	-1.86	-1.99	-2.18
9. Rail transport	0.53	0.35	0.46	0.64	0.81	0.12	0.28	0.23	0.47	0.56	1.08	1.49	1.88	2.09	2.44	2.74
10. Food manufacturing	0.47	0.28	0.39	0.53	0.53	-0.16	-0.28	-0.45	-0.48	-0.56	-0.57	-0.67	-0.79	-0.91	-1.05	-0.89
11. Beverage manufacturing	0.29	0.03	0.18	0.34	0.33	0.03	0.06	-0.02	0.07	0.06	0.21	0.36	0.50	0.65	0.82	1.37
12. Transport equipment manufacturing	-0.06	-0.26	-0.07	-0.06	-0.13	-0.31	-0.31	-0.30	-0.25	-0.22	-0.08	0.03	0.04	0.20	0.30	0.50
13. Other manufacturing	-0.41	-0.56	-0.47	-0.41	-0.42	-0.50	-0.39	-0.30	-0.25	-0.22	-0.25	-0.29	-0.34	-0.28	-0.27	-0.17
14. Automotive fuel retailing	-0.59	-0.72	-0.66	-0.65	-0.72	-0.50	-0.54	-0.54	-0.62	-0.69	-0.95	-1.13	-1.33	-1.42	-1.60	-1.77
15. Retail trade	-0.59	-0.72	-0.66	-0.65	-0.72	-0.50	-0.54	-0.54	-0.62	-0.69	-0.95	-1.13	-1.33	-1.42	-1.60	-1.77
16. Casino and gambling	-0.44	-0.54	-0.41	-0.36	-0.43	-0.13	-0.24	-0.28	-0.43	-0.55	-0.78	-0.93	-1.11	-1.17	-1.32	-1.55
17. Library museum and art	-0.44	-0.54	-0.41	-0.36	-0.43	-0.13	-0.24	-0.28	-0.43	-0.55	-0.78	-0.93	-1.11	-1.17	-1.32	-1.55
18. Other entertainment	-0.44	-0.54	-0.41	-0.36	-0.43	-0.13	-0.24	-0.28	-0.43	-0.55	-0.78	-0.93	-1.11	-1.17	-1.32	-1.55
19. Education	-0.31	-0.30	-0.18	-0.10	-0.11	0.16	0.15	0.14	0.08	0.03	-0.13	-0.17	-0.21	-0.20	-0.24	-0.32
20. Ownership of dwelling	-0.01	0.01	0.00	0.01	0.02	0.02	0.03	0.02	0.01	-0.01	-0.04	-0.08	-0.12	-0.17	-0.23	-0.31
21. Other industries	-0.39	-0.44	-0.37	-0.34	-0.38	-0.29	-0.31	-0.30	-0.36	-0.40	-0.53	-0.62	-0.73	-0.76	-0.85	-0.94

Source: CGE simulation results.

Table A.12: Tourism Industry Outputs, South Australia
(percentage deviation from base case)

Tourism Industry	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
1. Travel agency and tour operator services	-0.45	-0.44	-0.39	-0.39	-0.38	-0.43	-0.40	-0.34	-0.36	-0.34	-0.38	-0.45	-0.49	-0.46	-0.47	-0.45
2. Taxi transport	-0.45	-0.46	-0.46	-0.50	-0.52	-0.80	-0.82	-0.83	-0.85	-0.86	-0.84	-0.86	-0.84	-0.80	-0.76	-0.76
3. Air and water transport	-0.17	-0.06	-0.04	-0.01	0.01	-0.19	-0.17	-0.08	-0.09	-0.05	0.03	0.05	0.08	0.16	0.21	0.35
4. Motor vehicle hiring	-0.45	-0.44	-0.39	-0.39	-0.38	-0.43	-0.40	-0.34	-0.36	-0.34	-0.38	-0.45	-0.49	-0.46	-0.47	-0.45
5. Accommodation	-0.80	-0.83	-0.81	-0.83	-0.86	-1.00	-1.08	-1.10	-1.18	-1.23	-1.30	-1.42	-1.50	-1.49	-1.52	-1.63
6. Cafes, restaurants and food outlets	-0.80	-0.83	-0.81	-0.83	-0.86	-1.00	-1.08	-1.10	-1.18	-1.23	-1.30	-1.42	-1.50	-1.49	-1.52	-1.63
7. Clubs, pubs, taverns and bars	-0.80	-0.83	-0.81	-0.83	-0.86	-1.00	-1.08	-1.10	-1.18	-1.23	-1.30	-1.42	-1.50	-1.49	-1.52	-1.63
8. Other road transport	-0.45	-0.46	-0.46	-0.50	-0.52	-0.80	-0.82	-0.83	-0.85	-0.86	-0.84	-0.86	-0.84	-0.80	-0.76	-0.76
9. Rail transport	0.42	0.27	0.33	0.44	0.56	0.11	0.31	0.33	0.55	0.60	0.93	1.14	1.31	1.38	1.58	1.70
10. Food manufacturing	0.34	0.36	0.42	0.49	0.58	0.30	0.32	0.29	0.36	0.40	0.55	0.67	0.83	1.00	1.20	1.74
11. Beverage manufacturing	0.40	0.44	0.50	0.58	0.68	0.51	0.57	0.56	0.67	0.74	0.96	1.20	1.48	1.76	2.10	2.82
12. Transport equipment manufacturing	0.24	0.24	0.34	0.36	0.46	0.18	0.30	0.39	0.62	0.74	0.97	1.10	1.25	1.44	1.62	1.97
13. Other manufacturing	-0.53	-0.43	-0.31	-0.22	-0.13	-0.28	-0.14	0.05	0.10	0.22	0.27	0.22	0.19	0.33	0.40	0.60
14. Automotive fuel retailing	-0.49	-0.37	-0.29	-0.26	-0.20	-0.32	-0.26	-0.15	-0.14	-0.04	-0.02	-0.04	-0.03	0.07	0.12	0.30
15. Retail trade	-0.49	-0.37	-0.29	-0.26	-0.20	-0.32	-0.26	-0.15	-0.14	-0.04	-0.02	-0.04	-0.03	0.07	0.12	0.30
16. Casino and gambling	-0.99	-0.94	-0.92	-0.95	-0.99	-0.97	-1.06	-1.02	-1.14	-1.17	-1.31	-1.48	-1.59	-1.59	-1.67	-1.79
17. Library museum and art	-0.99	-0.94	-0.92	-0.95	-0.99	-0.97	-1.06	-1.02	-1.14	-1.17	-1.31	-1.48	-1.59	-1.59	-1.67	-1.79
18. Other entertainment	-0.99	-0.94	-0.92	-0.95	-0.99	-0.97	-1.06	-1.02	-1.14	-1.17	-1.31	-1.48	-1.59	-1.59	-1.67	-1.79
19. Education	-0.68	-0.46	-0.36	-0.30	-0.26	-0.26	-0.23	-0.10	-0.13	-0.08	-0.10	-0.13	-0.12	-0.03	0.02	0.06
20. Ownership of dwelling	-0.02	-0.06	-0.12	-0.19	-0.26	-0.33	-0.40	-0.47	-0.55	-0.62	-0.70	-0.79	-0.88	-0.97	-1.07	-1.17
21. Other industries	-0.65	-0.58	-0.50	-0.48	-0.46	-0.51	-0.48	-0.38	-0.41	-0.38	-0.42	-0.52	-0.58	-0.53	-0.55	-0.53

Source: CGE simulation results.

Table A.13: Tourism Industry Outputs, Western Australia
(percentage deviation from base case)

Tourism Industry	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
1. Travel agency and tour operator services	-0.04	0.08	0.18	0.27	0.30	0.35	0.38	0.36	0.37	0.37	0.35	0.37	0.40	0.39	0.39	0.35
2. Taxi transport	-0.13	-0.10	-0.12	-0.19	-0.28	-0.63	-0.75	-0.92	-1.00	-1.11	-1.14	-1.16	-1.16	-1.24	-1.26	-1.39
3. Air and water transport	0.11	0.17	0.16	0.15	0.11	-0.05	-0.10	-0.22	-0.27	-0.34	-0.35	-0.38	-0.38	-0.45	-0.49	-0.56
4. Motor vehicle hiring	-0.04	0.08	0.18	0.27	0.30	0.35	0.38	0.36	0.37	0.37	0.35	0.37	0.40	0.39	0.39	0.35
5. Accommodation	-0.08	0.08	0.10	0.13	0.09	0.11	-0.10	-0.13	-0.27	-0.30	-0.35	-0.39	-0.41	-0.48	-0.50	-0.70
6. Cafes, restaurants and food outlets	-0.08	0.08	0.10	0.13	0.09	0.11	-0.10	-0.13	-0.27	-0.30	-0.35	-0.39	-0.41	-0.48	-0.50	-0.70
7. Clubs, pubs, taverns and bars	-0.08	0.08	0.10	0.13	0.09	0.11	-0.10	-0.13	-0.27	-0.30	-0.35	-0.39	-0.41	-0.48	-0.50	-0.70
8. Other road transport	-0.13	-0.10	-0.12	-0.19	-0.28	-0.63	-0.75	-0.92	-1.00	-1.11	-1.14	-1.16	-1.16	-1.24	-1.26	-1.39
9. Rail transport	1.75	1.82	1.79	2.02	2.16	1.77	1.94	1.75	2.07	2.16	2.66	3.22	3.76	3.87	4.21	4.33
10. Food manufacturing	0.45	0.57	0.62	0.74	0.82	0.48	0.43	0.36	0.37	0.38	0.50	0.56	0.62	0.59	0.62	0.80
11. Beverage manufacturing	0.38	0.51	0.57	0.68	0.76	0.63	0.65	0.66	0.72	0.78	0.98	1.21	1.45	1.62	1.85	2.38
12. Transport equipment manufacturing	0.50	0.78	0.83	0.83	0.81	0.71	0.64	0.64	0.80	0.85	0.97	1.10	1.30	1.41	1.59	1.78
13. Other manufacturing	0.54	0.75	0.85	1.01	1.10	1.04	1.14	1.14	1.27	1.37	1.52	1.69	1.87	1.93	2.05	2.20
14. Automotive fuel retailing	-0.05	0.10	0.16	0.20	0.18	0.31	0.27	0.24	0.20	0.17	0.07	0.05	0.03	-0.02	-0.09	-0.18
15. Retail trade	-0.05	0.10	0.16	0.20	0.18	0.31	0.27	0.24	0.20	0.17	0.07	0.05	0.03	-0.02	-0.09	-0.18
16. Casino and gambling	-0.12	0.02	0.05	0.07	0.03	0.37	0.14	0.18	0.04	0.05	-0.04	-0.10	-0.15	-0.22	-0.23	-0.40
17. Library museum and art	-0.12	0.02	0.05	0.07	0.03	0.37	0.14	0.18	0.04	0.05	-0.04	-0.10	-0.15	-0.22	-0.23	-0.40
18. Other entertainment	-0.12	0.02	0.05	0.07	0.03	0.37	0.14	0.18	0.04	0.05	-0.04	-0.10	-0.15	-0.22	-0.23	-0.40
19. Education	0.16	0.33	0.39	0.46	0.48	0.68	0.61	0.61	0.59	0.62	0.60	0.66	0.74	0.75	0.83	0.82
20. Ownership of dwelling	0.00	0.01	0.04	0.06	0.07	0.09	0.13	0.14	0.17	0.18	0.20	0.21	0.21	0.21	0.20	0.18
21. Other industries	-0.01	0.12	0.19	0.27	0.29	0.38	0.37	0.37	0.36	0.38	0.37	0.39	0.43	0.42	0.44	0.41

Source: CGE simulation results.

Table A.14: Tourism Industry Outputs, Tasmania
(percentage deviation from base case)

Tourism Industry	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
1. Travel agency and tour operator services	-0.36	-0.33	-0.28	-0.27	-0.26	-0.26	-0.24	-0.20	-0.23	-0.23	-0.29	-0.37	-0.43	-0.43	-0.48	-0.50
2. Taxi transport	-0.60	-0.56	-0.55	-0.59	-0.61	-0.85	-0.92	-0.98	-1.05	-1.11	-1.16	-1.22	-1.30	-1.35	-1.40	-1.50
3. Air and water transport	-0.11	-0.03	0.00	0.01	0.03	-0.19	-0.17	-0.16	-0.18	-0.18	-0.12	-0.16	-0.22	-0.23	-0.28	-0.20
4. Motor vehicle hiring	-0.36	-0.33	-0.28	-0.27	-0.26	-0.26	-0.24	-0.20	-0.23	-0.23	-0.29	-0.37	-0.43	-0.43	-0.48	-0.50
5. Accommodation	-1.10	-1.07	-1.06	-1.06	-1.08	-1.12	-1.25	-1.26	-1.40	-1.45	-1.56	-1.73	-1.86	-1.94	-2.00	-2.19
6. Cafes, restaurants and food outlets	-1.10	-1.07	-1.06	-1.06	-1.08	-1.12	-1.25	-1.26	-1.40	-1.45	-1.56	-1.73	-1.86	-1.94	-2.00	-2.19
7. Clubs, pubs, taverns and bars	-1.10	-1.07	-1.06	-1.06	-1.08	-1.12	-1.25	-1.26	-1.40	-1.45	-1.56	-1.73	-1.86	-1.94	-2.00	-2.19
8. Other road transport	-0.60	-0.56	-0.55	-0.59	-0.61	-0.85	-0.92	-0.98	-1.05	-1.11	-1.16	-1.22	-1.30	-1.35	-1.40	-1.50
9. Rail transport	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10. Food manufacturing	0.20	0.17	0.19	0.24	0.29	0.03	0.03	0.01	0.04	0.06	0.18	0.25	0.32	0.38	0.49	0.86
11. Beverage manufacturing	0.23	0.19	0.21	0.25	0.30	0.10	0.12	0.11	0.16	0.20	0.35	0.48	0.62	0.74	0.92	1.42
12. Transport equipment manufacturing	-0.19	-0.11	-0.06	-0.13	-0.14	-0.26	-0.24	-0.09	0.02	0.14	0.31	0.45	0.65	0.92	1.16	1.42
13. Other manufacturing	0.00	0.05	0.13	0.21	0.30	0.20	0.31	0.41	0.50	0.59	0.65	0.64	0.64	0.72	0.79	0.95
14. Automotive fuel retailing	-0.66	-0.54	-0.43	-0.38	-0.31	-0.27	-0.24	-0.14	-0.18	-0.18	-0.24	-0.35	-0.46	-0.43	-0.48	-0.41
15. Retail trade	-0.66	-0.54	-0.43	-0.38	-0.31	-0.27	-0.24	-0.14	-0.18	-0.18	-0.24	-0.35	-0.46	-0.43	-0.48	-0.41
16. Casino and gambling	-1.09	-1.03	-1.00	-1.00	-1.03	-0.89	-1.02	-1.00	-1.16	-1.20	-1.34	-1.51	-1.66	-1.72	-1.78	-1.93
17. Library museum and art	-1.09	-1.03	-1.00	-1.00	-1.03	-0.89	-1.02	-1.00	-1.16	-1.20	-1.34	-1.51	-1.66	-1.72	-1.78	-1.93
18. Other entertainment	-1.09	-1.03	-1.00	-1.00	-1.03	-0.89	-1.02	-1.00	-1.16	-1.20	-1.34	-1.51	-1.66	-1.72	-1.78	-1.93
19. Education	-0.86	-0.56	-0.40	-0.29	-0.19	-0.14	-0.17	-0.13	-0.21	-0.21	-0.24	-0.29	-0.33	-0.29	-0.26	-0.24
20. Ownership of dwelling	-0.02	-0.11	-0.19	-0.28	-0.37	-0.45	-0.52	-0.59	-0.66	-0.73	-0.80	-0.87	-0.95	-1.03	-1.12	-1.20
21. Other industries	-0.61	-0.50	-0.42	-0.39	-0.36	-0.34	-0.35	-0.30	-0.36	-0.36	-0.42	-0.50	-0.57	-0.56	-0.58	-0.60

Source: CGE simulation results.

Table A.15: Tourism Industry Outputs, Northern Territory
(percentage deviation from base case)

Tourism Industry	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
1. Travel agency and tour operator services	-0.07	-0.02	0.05	0.10	0.12	0.15	0.17	0.14	0.13	0.12	0.08	0.06	0.07	0.05	0.03	-0.02
2. Taxi transport	-0.14	-0.17	-0.22	-0.31	-0.40	-0.64	-0.76	-0.96	-1.08	-1.23	-1.29	-1.36	-1.38	-1.46	-1.53	-1.69
3. Air and water transport	0.07	0.07	0.00	-0.04	-0.09	-0.55	-0.61	-0.80	-0.88	-0.99	-0.96	-0.98	-0.97	-1.03	-1.07	-1.13
4. Motor vehicle hiring	-0.07	-0.02	0.05	0.10	0.12	0.15	0.17	0.14	0.13	0.12	0.08	0.06	0.07	0.05	0.03	-0.02
5. Accommodation	-0.17	-0.14	-0.10	-0.07	-0.09	0.47	0.35	0.23	0.10	0.00	-0.08	-0.19	-0.27	-0.39	-0.47	-0.72
6. Cafes, restaurants and food outlets	-0.17	-0.14	-0.10	-0.07	-0.09	0.47	0.35	0.23	0.10	0.00	-0.08	-0.19	-0.27	-0.39	-0.47	-0.72
7. Clubs, pubs, taverns and bars	-0.17	-0.14	-0.10	-0.07	-0.09	0.47	0.35	0.23	0.10	0.00	-0.08	-0.19	-0.27	-0.39	-0.47	-0.72
8. Other road transport	-0.14	-0.17	-0.22	-0.31	-0.40	-0.64	-0.76	-0.96	-1.08	-1.23	-1.29	-1.36	-1.38	-1.46	-1.53	-1.69
9. Rail transport	1.45	1.41	1.41	1.58	1.76	1.14	1.29	1.05	1.30	1.34	1.79	2.32	2.84	2.99	3.32	3.45
10. Food manufacturing	0.36	0.32	0.36	0.44	0.49	0.32	0.32	0.28	0.28	0.28	0.36	0.39	0.41	0.37	0.36	0.51
11. Beverage manufacturing	0.36	0.31	0.35	0.43	0.48	0.39	0.43	0.41	0.44	0.46	0.56	0.64	0.72	0.73	0.79	1.06
12. Transport equipment manufacturing	0.54	0.70	0.77	0.79	0.80	0.75	0.71	0.69	0.81	0.85	0.97	1.11	1.33	1.47	1.68	1.86
13. Other manufacturing	0.07	0.08	0.10	0.15	0.14	0.03	0.11	0.08	0.12	0.14	0.13	0.10	0.09	0.03	-0.03	-0.06
14. Automotive fuel retailing	-0.16	-0.06	0.00	0.00	0.00	0.44	0.39	0.34	0.26	0.19	-0.02	-0.16	-0.29	-0.42	-0.61	-0.67
15. Retail trade	-0.16	-0.06	0.00	0.00	0.00	0.44	0.39	0.34	0.26	0.19	-0.02	-0.16	-0.29	-0.42	-0.61	-0.67
16. Casino and gambling	-0.21	-0.14	-0.07	-0.03	-0.04	0.78	0.69	0.67	0.57	0.54	0.44	0.34	0.26	0.18	0.13	-0.03
17. Library museum and art	-0.21	-0.14	-0.07	-0.03	-0.04	0.78	0.69	0.67	0.57	0.54	0.44	0.34	0.26	0.18	0.13	-0.03
18. Other entertainment	-0.21	-0.14	-0.07	-0.03	-0.04	0.78	0.69	0.67	0.57	0.54	0.44	0.34	0.26	0.18	0.13	-0.03
19. Education	0.11	0.22	0.29	0.35	0.39	0.83	0.78	0.73	0.68	0.69	0.65	0.68	0.73	0.74	0.80	0.84
20. Ownership of dwelling	0.00	0.00	0.01	0.04	0.07	0.14	0.42	0.67	0.89	1.08	1.25	1.39	1.50	1.58	1.63	1.66
21. Other industries	-0.07	0.00	0.07	0.12	0.14	0.40	0.38	0.36	0.32	0.32	0.28	0.26	0.26	0.24	0.24	0.21

Source: CGE simulation results.

Table A.16: Tourism Industry Outputs, Australian Capital Territory
(percentage deviation from base case)

Tourism Industry	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
1. Travel agency and tour operator services	-0.61	-0.58	-0.51	-0.51	-0.52	-0.57	-0.56	-0.51	-0.57	-0.58	-0.67	-0.79	-0.87	-0.86	-0.90	-0.93
2. Taxi transport	-0.49	-0.53	-0.58	-0.64	-0.68	-0.81	-0.83	-0.82	-0.91	-0.95	-1.05	-1.18	-1.25	-1.22	-1.31	-1.38
3. Air and water transport	-0.29	-0.34	-0.39	-0.43	-0.47	-0.96	-1.00	-1.07	-1.13	-1.19	-1.14	-1.18	-1.19	-1.18	-1.17	-1.14
4. Motor vehicle hiring	-0.61	-0.58	-0.51	-0.51	-0.52	-0.57	-0.56	-0.51	-0.57	-0.58	-0.67	-0.79	-0.87	-0.86	-0.90	-0.93
5. Accommodation	-1.23	-1.29	-1.33	-1.41	-1.51	-1.80	-1.94	-1.99	-2.16	-2.28	-2.46	-2.68	-2.85	-2.92	-3.06	-3.29
6. Cafes, restaurants and food outlets	-1.23	-1.29	-1.33	-1.41	-1.51	-1.80	-1.94	-1.99	-2.16	-2.28	-2.46	-2.68	-2.85	-2.92	-3.06	-3.29
7. Clubs, pubs, taverns and bars	-1.23	-1.29	-1.33	-1.41	-1.51	-1.80	-1.94	-1.99	-2.16	-2.28	-2.46	-2.68	-2.85	-2.92	-3.06	-3.29
8. Other road transport	-0.49	-0.53	-0.58	-0.64	-0.68	-0.81	-0.83	-0.82	-0.91	-0.95	-1.05	-1.18	-1.25	-1.22	-1.31	-1.38
9. Rail transport	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10. Food manufacturing	0.19	0.16	0.16	0.20	0.23	-0.14	-0.16	-0.20	-0.20	-0.21	-0.14	-0.17	-0.18	-0.19	-0.20	0.09
11. Beverage manufacturing	0.16	0.13	0.13	0.16	0.19	-0.04	-0.03	-0.05	-0.02	-0.01	0.09	0.15	0.22	0.29	0.37	0.79
12. Transport equipment manufacturing	-0.19	-0.13	-0.10	-0.18	-0.19	-0.40	-0.38	-0.27	-0.22	-0.13	-0.02	0.03	0.11	0.34	0.52	0.83
13. Other manufacturing	-0.41	-0.41	-0.34	-0.30	-0.25	-0.44	-0.34	-0.21	-0.18	-0.12	-0.06	-0.08	-0.06	0.07	0.16	0.34
14. Automotive fuel retailing	-1.23	-1.19	-1.12	-1.16	-1.20	-1.27	-1.33	-1.25	-1.41	-1.46	-1.68	-1.92	-2.10	-2.12	-2.26	-2.41
15. Retail trade	-1.23	-1.19	-1.12	-1.16	-1.20	-1.27	-1.33	-1.25	-1.41	-1.46	-1.68	-1.92	-2.10	-2.12	-2.26	-2.41
16. Casino and gambling	-1.17	-1.17	-1.18	-1.25	-1.34	-1.43	-1.55	-1.53	-1.70	-1.79	-2.00	-2.22	-2.39	-2.44	-2.57	-2.76
17. Library museum and art	-1.17	-1.17	-1.18	-1.25	-1.34	-1.43	-1.55	-1.53	-1.70	-1.79	-2.00	-2.22	-2.39	-2.44	-2.57	-2.76
18. Other entertainment	-1.17	-1.17	-1.18	-1.25	-1.34	-1.43	-1.55	-1.53	-1.70	-1.79	-2.00	-2.22	-2.39	-2.44	-2.57	-2.76
19. Education	-0.54	-0.46	-0.39	-0.38	-0.38	-0.30	-0.33	-0.28	-0.36	-0.37	-0.50	-0.59	-0.65	-0.62	-0.65	-0.71
20. Ownership of dwelling	-0.02	-0.13	-0.24	-0.36	-0.48	-0.61	-0.75	-0.89	-1.02	-1.16	-1.30	-1.45	-1.60	-1.76	-1.93	-2.10
21. Other industries	-0.63	-0.58	-0.53	-0.53	-0.55	-0.54	-0.57	-0.52	-0.61	-0.63	-0.75	-0.86	-0.95	-0.93	-0.98	-1.05

Source: CGE simulation results.

Table A.17: Tourism Value Added (GVA) by Industry and by State and Territory, 2025, $m (deviation from base case)

Tourism Industry	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	AUS
1. Travel agency and tour operator services	-3.65	-1.75	-10.84	-0.47	0.80	-0.50	-0.02	-0.42	-16.86
2. Taxi transport	-2.02	-1.65	-2.03	-0.08	-0.49	-0.06	-0.23	-0.11	-6.67
3. Air and water transport	-36.30	-4.72	-14.24	0.46	-1.52	-0.08	-2.72	-0.66	-59.80
4. Motor vehicle hiring	-1.79	-0.84	-6.42	-0.21	0.79	-0.28	-0.02	-0.16	-8.94
5. Accommodation	-24.90	-12.77	-21.93	-2.19	-2.73	-1.45	-0.83	-2.28	-69.08
6. Cafes, restaurants and food outlets	-16.75	-9.71	-14.51	-1.85	-1.76	-1.13	-0.44	-1.69	-47.84
7. Clubs, pubs, taverns and bars	-5.37	-3.11	-4.65	-0.59	-0.56	-0.36	-0.14	-0.54	-15.34
8. Other road transport	-6.35	-4.46	-4.01	-0.29	-1.44	-0.25	-1.34	-0.24	-18.38
9. Rail transport	5.99	1.75	3.62	0.20	3.44	0.00	0.13	0.00	15.12
10. Food manufacturing	-0.46	1.09	-1.21	0.69	0.51	0.12	0.01	0.00	0.75
11. Beverage manufacturing	0.75	1.53	1.45	2.83	1.27	0.08	0.00	0.00	7.91
12. Transport equipment manufacturing	0.00	0.14	0.05	0.11	0.11	0.00	0.01	0.00	0.43
13. Other manufacturing	0.59	1.35	-0.14	0.05	0.77	0.09	0.00	0.00	2.72
14. Automotive fuel retailing	-0.70	-0.55	-0.61	0.00	-0.03	0.00	0.00	0.00	-1.89
15. Other retail trade	-10.57	-3.20	-13.83	0.60	-0.76	-0.31	-0.53	-1.58	-30.19
16. Casinos and other gambling services	-0.67	-0.70	-0.60	-0.12	-0.06	-0.09	0.00	-0.13	-2.36
17. Libraries, museums and arts	-1.68	-1.33	-1.78	-0.26	-0.11	-0.14	0.00	-0.15	-5.46
18. Other entertainment services	-1.76	-1.39	-1.86	-0.27	-0.12	-0.15	0.00	-0.16	-5.71
19. Education	-2.27	-1.12	-1.33	0.04	1.94	-0.06	0.18	-0.13	-2.75
20. Ownership of dwellings	-4.89	-3.77	-0.75	-1.28	0.20	-0.32	0.23	-0.56	-11.14
21. All other industries	-6.87	-5.24	-8.41	-0.70	1.88	-0.23	0.19	-0.43	-19.81
Total	**-119.70**	**-50.45**	**-104.02**	**-3.34**	**2.12**	**-5.14**	**-5.53**	**-9.24**	**-295.31**
Total (%)	**-0.57**	**-0.39**	**-0.70**	**-0.11**	**0.03**	**-0.37**	**-0.32**	**-0.91**	**-0.48**

Note: Authors' calculations based on CGE simulation results and TSA industry GVA estimates.

Table A.18: Change in Tourism Net Taxes on Products by Industry and by State and Territory, 2025, $m (deviation from base case)

Tourism Product	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	AUS
1. Travel agency and tour operator services	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2. Taxi fares	-0.14	-0.11	-0.14	-0.01	-0.03	0.00	-0.01	-0.01	-0.45
3. Long distance passenger transportation	0.38	0.10	0.40	-0.01	0.06	0.00	0.06	0.02	1.00
4. Motor vehicle hire and lease	-0.20	-0.09	-0.73	-0.02	0.09	-0.03	0.00	-0.02	-1.00
5. Accommodation services	-2.34	-1.21	-2.08	-0.21	-0.26	-0.13	-0.08	-0.22	-6.53
6. Takeaway and restaurant meals	-4.42	-2.58	-3.87	-0.49	-0.47	-0.29	-0.12	-0.46	-12.70
7. Shopping (including gifts and souvenirs)	-4.65	-3.43	-5.08	-0.61	-0.62	-0.34	-0.09	-0.33	-15.15
8. Local area passenger transportation	1.48	0.82	1.03	0.04	0.23	0.04	0.10	0.02	3.77
9. Repair and maintenance of motor vehicles	0.11	0.04	0.12	0.01	0.09	0.00	0.01	0.00	0.38
10. Fuel (petrol, diesel)	-1.27	2.20	-3.97	1.70	1.76	0.32	0.22	0.03	0.99
11. Food products	0.16	0.21	0.31	0.15	0.22	0.02	0.02	0.01	1.10
12. Alcoholic beverages and other beverages	-0.35	1.73	0.92	1.01	1.33	0.17	0.23	0.07	5.11
13. Motor vehicles, caravans, boats, etc.	0.00	0.02	-0.01	0.01	0.10	0.00	0.00	0.00	0.12
14. Recreational, cultural and sports services	-0.63	-0.19	-1.00	0.02	-0.02	-0.01	-0.02	-0.06	-1.92
15. Gambling and betting services	-0.99	-0.38	-1.30	0.03	-0.05	-0.04	-0.06	-0.20	-2.97
16. Education	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17. Actual and imputed rent on holiday houses	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18. Other tourism goods and services	-3.22	-2.62	-2.60	-0.51	-0.34	-0.15	-0.01	-0.26	-9.71
Total	**-16.07**	**-5.49**	**-17.99**	**1.11**	**2.09**	**-0.44**	**0.23**	**-1.41**	**-37.96**
Total (%)	**-0.47**	**-0.23**	**-0.57**	**0.16**	**0.16**	**-0.15**	**0.08**	**-0.64**	**-0.32**

Note: Authors' calculations based on CGE simulation results and TSA industry net taxes on products estimates.

Table A.19: Tourism Gross State Product (GSP) by Industry and by State and Territory, 2025, $m
(deviation from base case)

Tourism Industry	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	AUS
1. Travel agency and tour operator services	-3.65	-1.75	-10.84	-0.47	0.80	-0.50	-0.02	-0.42	-16.86
2. Taxi transport	-2.16	-1.76	-2.17	-0.09	-0.52	-0.06	-0.24	-0.11	-7.11
3. Air and water transport	-35.93	-4.62	-13.84	0.45	-1.47	-0.08	-2.66	-0.64	-58.80
4. Motor vehicle hiring	-2.00	-0.94	-7.14	-0.24	0.88	-0.31	-0.02	-0.18	-9.95
5. Accommodation	-27.24	-13.98	-24.01	-2.40	-2.99	-1.58	-0.91	-2.50	-75.61
6. Cafes, restaurants and food outlets	-21.17	-12.28	-18.38	-2.34	-2.23	-1.43	-0.56	-2.15	-60.53
7. Clubs, pubs, taverns and bars	-5.37	-3.11	-4.65	-0.59	-0.56	-0.36	-0.14	-0.54	-15.34
8. Other road transport	-4.87	-3.64	-2.97	-0.26	-1.21	-0.21	-1.24	-0.21	-14.62
9. Rail transport	5.99	1.75	3.62	0.20	3.44	0.00	0.13	0.00	15.12
10. Food manufacturing	-0.29	1.30	-0.90	0.83	0.73	0.15	0.03	0.01	1.85
11. Beverage manufacturing	0.40	3.25	2.37	3.84	2.60	0.26	0.23	0.07	13.01
12. Transport equipment manufacturing	0.00	0.16	0.04	0.12	0.21	0.00	0.01	0.00	0.55
13. Other manufacturing	0.70	1.39	-0.02	0.06	0.86	0.09	0.01	0.00	3.10
14. Automotive fuel retailing	-1.98	1.65	-4.57	1.70	1.73	0.32	0.22	0.03	-0.90
15. Other retail trade	-15.22	-6.62	-18.91	-0.01	-1.39	-0.65	-0.63	-1.91	-45.34
16. Casinos and other gambling services	-1.66	-1.08	-1.89	-0.08	-0.11	-0.13	-0.06	-0.33	-5.34
17. Libraries, museums and arts	-1.68	-1.33	-1.78	-0.26	-0.11	-0.14	0.00	-0.15	-5.46
18. Other entertainment services	-2.39	-1.58	-2.86	-0.25	-0.14	-0.16	-0.02	-0.22	-7.63
19. Education	-2.27	-1.12	-1.33	0.04	1.94	-0.06	0.18	-0.13	-2.75
20. Ownership of dwellings	-4.89	-3.77	-0.75	-1.28	0.20	-0.32	0.23	-0.56	-11.14
21. All other industries	-10.09	-7.86	-11.01	-1.21	1.54	-0.39	0.18	-0.70	-29.52
Total	**-135.77**	**-55.94**	**-122.01**	**-2.23**	**4.21**	**-5.59**	**-5.30**	**-10.65**	**-333.27**
Total (%)	**-0.56**	**-0.37**	**-0.68**	**-0.06**	**0.06**	**-0.33**	**-0.26**	**-0.86**	**-0.45**

Note: Estimates in Table A.19 represent the summation of the estimates of Tables A.17 and A.18.

Table A.20: Tourism Employment by Industry and by State and Territory, 2025, '000
(deviation from base case)

Tourism Industry	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	AUS
1. Travel agency and tour operator services	-0.018	-0.003	-0.083	0.001	0.021	-0.001	0.005	-0.002	-0.081
2. Road transport and motor vehicle hiring	0.016	0.003	-0.003	0.001	-0.004	0.001	0	0.001	0.013
3. Air and water transport	-0.016	0.002	-0.017	-0.001	0.001	0	-0.001	0	-0.032
4. Accommodation	-0.194	-0.105	-0.213	-0.015	-0.013	-0.011	-0.003	-0.015	-0.569
5. Cafés and restaurants	-0.136	-0.083	-0.147	-0.013	-0.009	-0.009	-0.002	-0.011	-0.409
6. Clubs, pubs, taverns and bars	-0.063	-0.039	-0.068	-0.006	-0.004	-0.004	-0.001	-0.005	-0.191
7. Rail transport	-0.001	-0.003	0.014	-0.001	0.001	0	0	0	0.011
8. Manufacturing	-0.021	-0.019	0	-0.008	0	-0.003	0	0	-0.051
9. Retail trade	-0.031	0.001	-0.111	0.007	0.01	0	-0.002	-0.005	-0.13
10. Casinos and other gambling services	-0.003	-0.003	-0.003	-0.001	0	0	0	-0.001	-0.01
11. Libraries, museums and arts	-0.017	-0.015	-0.021	-0.003	0.001	-0.002	0	-0.001	-0.058
12. Other entertainment services	-0.023	-0.02	-0.03	-0.004	0.001	-0.002	0	-0.002	-0.08
13. Education	-0.005	0.002	-0.003	0.002	0.02	0	0.002	-0.001	0.016
14. All other industries	-0.012	-0.004	-0.021	0	0.029	0	0.002	-0.001	-0.006
Total	**-0.524**	**-0.284**	**-0.707**	**-0.042**	**0.053**	**-0.032**	**0.001**	**-0.043**	**-1.578**
Total (%)	**-0.26**	**-0.21**	**-0.39**	**-0.13**	**0.08**	**-0.20**	**0.01**	**-0.46**	**-0.24**

Note: Authors' calculations based on CGE simulation results and TSA industry employment estimates.