

The Impacts of the Passenger Movement Charge on Tourism Output and the Economy

REPORT BY

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Executive Summary

The Passenger Movement Charge (PMC) is a levy of \$47 on departing passengers, covering outbound international visitors and outbound Australian residents. Currently, around \$503 million is sourced from this tax.

The study considers the impacts of a 20% increase in the PMC. A computable general equilibrium (CGE) model is used to assess the impacts of the PMC on key macroeconomic variables, such as Gross Domestic Product (GDP), Gross National Income (GNI) and Economic Welfare, and on tourism industry indicators such as output and employment. The study also looks at the impacts on the international and Australian resident outbound travel segments.

The assessments are reliant on a number of key parameters, for example, tourism demand elasticity estimates differ widely in the available literature, and there is no accepted value available for this assessment. As a result, two tourism demand elasticity values are used, of 0.5, and 1.0. This range covers most plausible estimates, and enables the sensitivity of the simulations to elasticity to be gauged. Given that the modelling is broadly linear, it is possible for the reader to substitute alternative values of the elasticities, for example, 0.73, to work out the implications of any elasticity on tourism and the Australian economy as a whole.

The report decomposes the impacts of raising the PMC into five components. The potential impacts of the increase in the PMC for the *international visitor segment* used in this report are:

- a *tax revenue impact*, whereby Australia gains more tax revenue from foreign visitors, and
- an *expenditure effect*, whereby Australia loses benefits because of reduced foreign visitation as a result of the increase in the cost of visiting Australia.

The impacts of an increase in the PMC for *Australian resident*

outbound tourism used in this report are:

- a *tax revenue effect*, whereby additional revenue is earned from the PMC on outbound travellers;
- an *expenditure effect*, whereby as outbound travel falls, expenditure on tourism overseas is replaced by expenditure on (non tourism) goods and services within Australia; and (if present)
- a *domestic tourism substitution effect*, whereby some or all of the additional expenditure in Australia is spent on domestic tourism.

Under the tax neutrality assumption, the additional tax revenue from inbound and outbound tourism is assumed to be spent on government goods and services.

Key findings:

Using the demand elasticity ($\epsilon_d = 0.5$, see Table ES1 below) scenario, the increase of the PMC by 20% is positive for the Australian economy by \$49 million (in terms of GNI), but has a negative impact on Australian tourism output of around \$7 million.

The cost on the tourism industry will be more negative if the reduction in outbound tourism does not help stimulate domestic tourism.

These results show that although the Australian economy benefits as a whole, it will be at a cost to the tourism industry. There is an unambiguous negative impact on the tourism industry. Tourism experiences little by way of direct positive impact, except to the extent of any substitution of Australian outbound travel by domestic travel. Here the lower the level of such substitution, the higher the cost to the tourism industry.

Table ES1: Summary of Simulation Results for Impact of a 20% increase in the PMC, with an elasticity of demand for inbound and outbound travel value of 0.5.

Tourism Segment	Tax Revenue Effect, \$m	Domestic Tourism Substitution Effect, \$m	Expenditure Effect, \$m	Total Impact, \$m	% of a 20% Rise in PMC Yielding \$100.56 million
<i>Inbound</i>					
GDP	0.77		-1.77	-1.00	-1.00
GNI	46.70		-1.77	44.93	44.68
Tourism Output	-0.10		-20.68	-20.78	-20.66
<i>Outbound</i>					
GDP	1.27	1.68	1.10	4.05	4.02
GNI	1.27	1.68	1.10	4.05	4.02
Tourism Output	-4.69	22.29	-4.31	13.29	13.22
<i>Total</i>					
GDP	2.04	1.68	-0.67	3.05	3.03
GNI	47.97	1.68	-0.67	48.98	48.78
Tourism Output	-4.79	22.29	-24.99	-7.49	-7.45

1. Background

This study provides an assessment the economic impacts of a 20 per cent increase to the Australian Passenger Movement Charge (PMC) on the Australian economy. The PMC is a charge levied at the level of \$47 per passenger for nearly all outbound travellers). The tax is levied on all travellers travelling overseas from Australia¹, including departing international visitors and Australian residents. It is in effect an export tax on international visitors, and an import tax imposed on Australian residents.

Further background on the PMC is given in Appendix A.1.

The study seeks to identify and measure a range of economic impacts of the tax, using a computable general equilibrium (CGE) model. These include the impacts on:

1. Gross Domestic Product (GDP)
2. Gross National Income (GNI)
3. Economic Welfare
4. Aggregate Employment
5. Tourism Output
6. Tourism GDP
7. Tourism Employment

(See Section 2 for definitions of these concepts).

Detailed estimates are provided for Australia as a whole and for each of the Australian states and territories.

This assessment also distinguishes between the effects of the PMC on each travel segment: the international visitor (or overseas resident) and Australian resident outbound tourism.

For *international visitors to Australia*, the PMC has:

- a negative impact on the tourism industry,
- a negative effect on the whole economy due to the reduction in tourism benefits, but
- a positive tax effect on the economy as a whole economy to the extent that the tax is paid by foreign visitors.

For Australian residents travelling overseas, the PMC has:

¹ Certain passengers are exempt from PMC and they include person under 12 years old, member of the defence force of a country other than Australia and his/her spouse or child, crew member of an aircraft and a ship and his/her spouse or child, transit passenger and emergency passenger. For a complete list see Section 5 of the Passenger Movement Charge Collection Act 1978 (AGD, 2008).

- a positive effect on the tourism industry through a reduction in outbound tourism, to the extent that domestic tourism is a substitute for outbound tourism, which leads to a positive effect on the economy as a whole,
- if Australian residents substitute domestic travel for outbound travel, there will be a positive effect on the economy. This is sourced from a reduction in Australian residents making outbound trips to expenditure on other goods and services in Australia, and
- to the extent that residents switch from purchasing outbound tourism to other (non tourism) goods and services, the positive effects on the tourism industry will be reduced. The simulations reported allow the possibility that there will be a full substitution of domestic for overseas tourism when the PMC is raised. However, given the recent performance of domestic tourism it would be unlikely that this would occur. If it is considered that there will be no substitution, only the first two impacts will be present: the negative impact on the tourism industry would be greater.

In practice, the substitution effect is likely to be shared between increased expenditure on domestic tourism and on other goods and services. For the economy as a whole, the impact of a switch from outbound travel expenditure to domestic spending will be positive, regardless of whether it is to domestic travel or to increased expenditure on other goods and services.

In the way that the simulations are done, it is possible to read off the effects of a zero switch for outbound tourism to domestic tourism, or of a 100% switch from outbound tourism to domestic tourism. Given that the model results are linear, it is also easy to calculate the effects of any switch between zero and 100%. To the extent that spending on domestic travel may have slightly greater economic impacts than spending on goods which may be less labour intensive than tourism, or involve greater leakages to imports, a switch to domestic tourism may have slightly larger impacts but the differences are likely to be relatively small.

The net impact on the tourism industry is small (if domestic tourism substitutes for outbound tourism) but this can go either way. However, there will be a net positive impact on the economy as a whole in most cases. This comes about because of the tax effect – Australia gains from foreign tourists paying Australian taxes rather than Australian residents. This effect is sufficient to outweigh other impacts.

2. Model, Simulations and Results

2.1 The Model

This study uses a tourism focussed CGE model called M2RNSW, developed under a research project funded by the Sustainable Tourism Cooperative Research Centre (STCRC).

M2RNSW is an adaptation of the Monash Multi-Regional Forecasting (MMRF) model of the Australian economy developed by the Centre of Policy Studies at Monash University.

M2RNSW has been applied to assess the economic effects of events and world tourism crises (Dwyer, Forsyth and Spurr, 2006a, b; Dwyer, Forsyth, Spurr and Ho, 2006a, b; Dwyer and Forsyth, 2008); as well as to measure tourism productivity and economic yield (Dwyer, Forsyth and Spurr, 2007); and contribution of tourism by origin market to a state economy (Dwyer et al., 2003). A detailed description of the M2RNSW model is given in Appendix A.5.

2.2 Details of the Simulations

A set of simulations have been carried out to assess the impacts of the PMC on the economy in total and on the tourism industry.

The impacts of the increase in the PMC for the *international visitor sector* considered in this assessment include:

- a *tax revenue impact*, whereby Australia gains more tax revenue from foreign visitors, and
- an *expenditure effect*, whereby Australia loses benefits from expenditure because of reduced visits from foreign visitors as a result of the increase in the cost of visiting Australia.

The impacts of an increase in the PMC for Australian resident *outbound travel* are:

- a *tax revenue effect*, whereby additional revenue is earned from the PMC on outbound travellers;
- an *expenditure effect*, whereby, as outbound travel falls, expenditure on tourism overseas is replaced by expenditure on (non-tourism) goods and services within Australia; and
- a *domestic tourism substitution effect*, whereby some or all of the additional expenditure in Australia is spent on domestic tourism.

The simulations reported allow the possibility that there will be a full substitution of domestic for overseas tourism when the PMC is raised. If it is considered that there will be no substitution, only the first two impacts will be present. In other words, the negative impact on the tourism industry will increase. If 40% domestic substitution is expected, then 40% of the domestic tourism substitution effect as estimated should be added to the other two effects.

For both inbound and outbound tourism, an assumption of budget neutrality is maintained, meaning that additional tax revenues are all spent on government provided goods and services, but not specifically benefiting tourism. Thus the effects are:

Inbound: Total Inbound Effects = Effect on expenditure + Tax revenue effect

Outbound: Total Outbound Effects = Effect on expenditure + Tax Revenue Effects + Domestic Tourism substitution effect (if present)

Inbound effects+ Outbound effects = Overall Effect of changes in the PMC.

Key Indicators for the Study

The study produces a large number of indicators of impacts on the economy. However, many of these are not of particular interest, others may be of interest for special purposes. In the text of this report we concentrate on key variables. These are:

Gross Domestic Product (GDP)

GDP measures the total production of the economy. GDP can be derived in three ways – the production approach, the expenditure approach and the income approach, all of which in principle give the same result². When GDP goes up and factor inputs are constant, and there are no changes in income from abroad, it is a rough measure of how much better off the economy is.

Economic Welfare

When GDP goes up as a result of additional factor inputs there will be additional output, but also inputs that have a cost. To measure how much better off the economy is, the costs of the extra inputs need to be subtracted from the increased value of output (as is done, for example, by Dixon, 2009).

Gross National Income (GNI)

For the purposes of modelling, GDP and GNI are, in many cases, interchangeable. Gross national income (GNI) comprises the total value produced within a country (i.e. its GDP), together with its income received from other countries, less similar payments made to other countries.

However, for cases such as the PMC simulations, GDP and GNI are not the same. When foreign residents pay a tax to the Australian Government, the production (GDP) is the same. However, the income available to Australia goes up – Australia is better off to the extent that foreigners are paying the tax, not Australians. Income from abroad is increased. This effect is captured in GNI but not GDP.

²According to the expenditure approach, GDP (Y) is a sum of consumption (C), investment (I), government spending (G) and net exports (X - M) i.e., $GDP = C+I+G+X-M$. The formula for GDP by income approach is: $GDP = \text{compensation of employees} + \text{gross operating surplus} + \text{gross mixed income} + \text{taxes less subsidies on production and imports}$.

Thus when assessing how affected Australia is as a result of imposing the PMC, GNI should be used.

As noted above, the additional factors used in production need to be considered. This means that income from abroad should be accounted for in the benefits measure i.e. use GNI not GDP for the base measure.

Aggregate Employment

One variable that is often highlighted is aggregate employment. The model can allow for both full employment and flexible employment. In the flexible employment case, changes in expenditure or taxes can raise or lower employment. For the purposes of this study, the Australian economy is regarded as close to full employment.

Tourism Industry Output

The impacts on the output of the tourism industry can be very different from the impacts on output across the whole of the economy. Industry output represents the total value of output sold to tourists. Tourism industry output is the output of only the tourism industry. Often a change will result in aggregate output increasing, yet tourism industry output falls. Tourism industry output is based on CGE model simulations and the Australian Tourism Satellite Account (TSA) (ABS, 2010b) and corresponds to Direct Tourism Output in the TSA.

Tourism GDP

Tourism GDP, consisting of tourism value added plus taxes is less than the value of output to the extent that intermediate inputs are used in producing tourism services. Typically, tourism GDP is about half the value of tourism output.

Tourism Industry Employment

This is based on model simulations and the Australian Tourism Satellite Account (ATSA), and this variable corresponds to Direct Tourism Employment in the ATSA.

The key underlying assumptions common to all the basic simulations are:

- Fixed national employment
- Flexible national real wage
- Fixed real capital stock
- Flexible national rate of return on capital
- Fixed real investment
- Fixed real international trade balance
- Flexible exchange rate
- Fixed real state government budget surplus
- Fixed real federal government budget surplus
- Fixed real household saving
- Fixed real current account surplus
- Government budget neutrality

In addition, simulations of the impacts on industries (by MMRF/M2RNSW industry are provided in Appendix A.3.

This report also examines the sensitivity of the results to possible values of the key parameters. As a simulation study, it poses the question of “what would happen if” particular parameters, such as elasticities, were to have a specific value. Elasticities of 0.5 and 1.0 have been used in the simulations, covering a range of possible values, and providing a gauge of the sensitivity of the results. The first group of simulations employs an elasticity of 0.5, and an elasticity of 1.0 is also used to illustrate the effect of the higher sensitivity of tourism to the PMC. Confidence should not be placed on any precise value of the elasticity of demand, as there are no settled estimates. However, recent studies, such as those of Seetaram (2010) have estimated values slightly less than 0.5.

In broad terms, *elasticity* describes the sensitivity of one variable to changes in another variable, or how much one variable changes in direct response to changes in another. Price elasticity of demand, as employed here, refers to the extent to which the quantity demanded for a tourism product changes because of a change in the price of that product. Since an increase in the PMC results in a higher price charged to airline passengers, it will impact adversely on tourist numbers, both inbound and outbound, and their associated expenditure.

We can estimate price elasticity as an arc or point measure. The arc price elasticity of demand for any particular tourism product (ϵ_d) may be expressed as:

$$\epsilon = \frac{\text{percentage change in the quantity demanded of the tourism product}}{\text{percentage change in the price of the tourism product}}$$

The Point elasticity of demand measures the price elasticity at a specific point on the demand curve. The point elasticity of demand is the slope of a demand curve at that price multiplied by the ratio of price to quantity. Because point elasticity is for an infinitesimally small change in price and quantity, it is defined in differentials as follows: $(dQ/Q)/(dP/P) = (dP/dQ).P/Q$

The price elasticity for a tourism product will vary depending on the *availability of substitutes, the product price relative to income, time*, and whether a price change is considered to be *permanent or temporary* (Dwyer, Forsyth and Dwyer 2010:43-44).

There have been some studies done of taxes similar to the PMC in other countries. They come up with different conclusions – though it is clear why. There have been studies done which employ input-output techniques: for example the International Air Transport Association (IATA) study of the UK APD (IATA, 2006) and the German Aerospace Center (DLR) study of the German tax (Berster et al., 2010). These are guaranteed to produce negative results for the tourism industry given that they highlight the negative effects on reducing tourism output but give no weight to the costs of providing that output. There have been other studies: for example the Access Economics study, which use a CGE approach. However, there is not enough detail given in the report to compare this study with this research, particularly as the Access Economics (2008) study does not appear to measure the impacts on GNI and Economic Benefits, which are the key indicators of how much worse or better off Australia is from the imposition of the PMC.

Calculation of the shock values for different simulation scenarios:

The shocks to the economy include an effect on tourism demand, and an effect on taxes. The effect on tourism demand is calculated as below.

Low Elasticity Case:

Revenue collected from the PMC, \$million, 2008–09 ^a	Additional revenue raised if the PMC rate per person increases by 20%, \$m	Share of overseas arrivals, July 2009–June 2010 ^b	Share of overseas departures, July 2009–June 2010 ^b	PMC revenue collected from inbound passengers, \$m	PMC revenue collected from outbound passengers, \$m	Reduction in inbound tourism expenditure, using elasticity value 0.5, \$m	Reduction in outbound tourism expenditure, using elasticity value 0.5, \$m
502.80	100.56	0.46	0.54	45.93 (=100.56 *0.46)	54.63 (=100.56 *0.54)	22.97 (=45.93*0.5)	27.31 (=54.63*0.5)

Source: ^a Australian Customs and Border Protection Services (2009); ^b Australian Bureau of Statistics (2010a). These percentages refer to the share of non residents of Australia in tourist flows, inbound and outbound.

High Elasticity Case:

Revenue collected from the PMC, \$million, 2008–09 ^a	Additional revenue raised if the PMC rate per person increases by 20%, \$m	Share of overseas arrivals, July 2009–June 2010 ^b	Share of overseas departures, July 2009–June 2010 ^b	PMC revenue collected from inbound passengers, \$m	PMC revenue collected from outbound passengers, \$m	Reduction in inbound tourism expenditure, using elasticity value 1.0, \$m	Reduction in outbound tourism expenditure, using elasticity value 1.0, \$m
502.80	100.56	0.46	0.54	45.93 (=100.56 *0.46)	54.63 (=100.56 *0.54)	45.93 (=45.93*1.0)	54.63 (=54.63*1.0)

Source: ^a Australian Customs and Border Protection Services (2009); ^b Australian Bureau of Statistics (2010a)

In addition to the shock to the economy through changes in tourism expenditure, there is also a change in taxes received by the government. In the inbound case, the Australian government receives taxes from abroad, while in the outbound case, there is a net overall increase in taxes received from Australian residents.

2.3 Description of Simulations

Details of the simulations that are employed in the PMC modelling are given below.

Low Elasticity Case:

- Simulation 1 – Inbound Expenditure Effect: Inbound tourism expenditure decreases by \$22.97 million
- Simulation 2 – Tax Revenue Effect 1: Tax on inbound tourism increases by \$45.93 million and Commonwealth budget expenditure on goods and services increases by \$45.93 million
- Simulation 3 – Outbound Expenditure Effect: Outbound tourism expenditure decreases by \$27.31 million
- Simulation 4 – Tax Revenue Effect 2: Tax on outbound tourism expenditure increases by \$54.63 million and Commonwealth budget expenditure increases by \$54.63 million
- Simulation 5 – Domestic Tourism Substitution Effect: Domestic tourism increases by \$27.31 million

High Elasticity Case:

- Simulation 1 – Inbound Expenditure Effect: Inbound tourism expenditure decreases by \$45.93 million
- Simulation 2 – Tax Revenue Effect 1: Tax on inbound tourism increases by \$45.93 million and Commonwealth budget expenditure increases by \$45.93 million
- Simulation 3 – Outbound Expenditure Effect: Outbound tourism expenditure decreases by \$54.63 million
- Simulation 4 – Tax Revenue Effect 2: Tax on outbound tourism increases by \$54.63 million and Commonwealth budget expenditure on services increases by \$54.63 million
- Simulation 5 – Domestic Tourism Substitution Effect: Domestic tourism expenditure increases by \$54.63 million

In doing these simulations, estimates were made of the effect of the PMC on tourism prices by applying elasticities outside the model, and the model was used to estimate the effects on taxes and expenditures.

2.4 Economic Effects of the PMC: Simulation Results

Simulations 1 – Low Elasticity case

Both sets of simulations are for the case of a 20% increase in the PMC per traveller. They assume a short run economy and full employment – this means that there is no time to increase the stock of capital. In this case, the elasticity of demand for inbound and outbound travel is assumed to be 0.5. Key results for the simulations are given in Tables 1–3.

**Table 1: Economic Effects of the PMC – Inbound Tourism
Inbound Expenditure Effect and Tax Revenue Effect 1**

National and Tourism Macro Variable	Inbound Expenditure Effect	Tax Revenue Effect 1	Total
Change in real GDP, \$m	-1.77	0.77	-1.00
Change in real GNI, \$m	-1.77	46.70	44.93
Change in Economic Welfare, \$m	-1.77	46.70	44.93
Change in aggregate labour	0	0	0
Change in real tourism output, \$m	-20.68	-0.10	-20.78
Change in real tourism GDP, \$m	-10.87	-0.05	-10.93
Change in tourism employment, person	-161	-1	-162

The results from the increase in the PMC on inbound travel are given in Table 1. The resulting rise in the PMC of \$45.93m leads to a fall in inbound tourism of \$22.97m. The impacts of this are broken up into the impacts of reduced tourism and the impacts of the taxes. The impact on GDP from decreased tourism is -\$1.77m. The impact on GNI and Economic Welfare will be the same, since factor inputs are unchanged. There is a fall in Tourism Output and Tourism GDP, and in tourism employment. There is a positive impact on GDP with the tax revenue effect, but a much larger effect on GNI and Economic Welfare because non-residents rather than Australians are paying the tax.

Overall, however, there is a negative impact on GDP, and a large positive impact on GNI and Economic Welfare. Australia, overall, gains from increasing the PMC. However, tourism industry output, tourism GDP and tourism employment will be reduced.

**Table 2: Economic Effects of the PMC – Outbound Tourism
Tourism Substitution Effect, Tax Revenue Effect 2 and Domestic Tourism Substitution
Effect**

National and Tourism Macro Variable	Outbound Expenditure Effect	Tax Revenue Effect 2	Domestic Tourism Substitution Effect	Total
Change in real GDP, \$m	1.10	1.27	1.68	4.04
Change in real GNI, \$m	1.10	1.27	1.68	4.04
Change in Economic Welfare, \$m	1.08	1.26	1.68	4.03
Change in aggregate labour	0	0	0	0
Change in real tourism output, \$m	-4.31	-4.69	22.29	13.29
Change in real tourism GDP, \$m	-2.27	-2.47	11.72	6.99
Change in tourism employment, person	-34	-37	174	103

The results from the increase in the PMC on outbound travel are given in Table 2. The resulting \$54.63m rise in the PMC leads to a fall in outbound tourism expenditure of \$27.31m. The switch in expenditure from outbound tourism to domestic goods and services has a positive impact on GDP, GNI and Economic Welfare of \$1.10m. There is a negative initial impact on the tourism industry since a reduction in outbound tourism reduces home tourism. This is because outbound tourists engage in some domestic tourism (before and after expenditures) in the context of their outbound trips.

There is also a positive impact on GDP and other macro indicators due to the switch in taxes. The tourism industry is little affected, however.

Finally there is an effect due to the replacement of general spending on goods and services by spending on domestic tourism. GDP and GNI rise slightly. However, there is a large impact on tourism output, GDP and employment in the case where there is full substitution of domestic for outbound. Overall, GDP, GNI and Economic Welfare rise by a moderate amount (\$4.04m) as a result of increasing the PMC on outbound tourism. Tourism output and employment are positively impacted by the rise in the PMC.

Table 3: Economic Effects of the PMC – Inbound and Outbound Tourism

National and Tourism Macro Variable	Inbound Expenditure Effect	Tax Revenue Effect 1	Outbound Expenditure Effect	Tax Revenue Effect 2	Domestic Tourism Substitution Effect	Total
Change in real GDP, \$m	-1.77	0.77	1.10	1.27	1.68	3.04
Change in real GNI, \$m	-1.77	46.70	1.10	1.27	1.68	48.97
Change in Economic Welfare, \$m	-1.77	46.70	1.08	1.26	1.68	48.96
Change in aggregate labour	0	0	0	0	0	0
Change in real tourism output, \$m	-20.68	-0.10	-4.31	-4.69	22.29	-7.49
Change in real tourism GDP, \$m	-10.87	-0.05	-2.27	-2.47	11.72	-3.94
Change in tourism employment, person	-161	-1	-34	-37	174	-58

The net or overall effect from increasing the PMC, through its impacts on inbound and outbound travel, is summarised in Table 3. The results from the previous tables are summarised, and the net balance is recorded. There is:

- a positive impact on GDP (\$3.04m) – the negative impact on tourism benefits (-\$1.77m) as a result of a reduction in inbound tourism is offset by positive effects (total \$4.81m, comprising \$0.77m of tax revenue effect; \$1.10m of Outbound Expenditure Effect; \$1.27m of tax revenue effect; and \$1.68m domestic tourism substitution effect).

There is a large positive impact on GNI of \$48.97m and Economic Welfare of \$48.96m due mainly to the impact on taxes – the PMC results in foreign tourists paying Australian taxes.

Finally, there is a net negative effect on the tourism industry (tourism industry output falls by \$7.49m), largely because the decline as a result of reduced inbound travel is greater than the positive effect resulting from reduced outbound travel.

Simulations 2 – High Elasticity Case

The second sets of simulations are for a full employment economy in the short run with the elasticity of demand for inbound and outbound travel of 1.0. Key results for the simulations are given in Tables 4-6.

**Table 4: Economic Effects of the PMC – Inbound Tourism
Inbound Expenditure Effect and Tax Revenue Effect 1**

National and Tourism Macro Variable	Inbound Expenditure Effect	Tax Revenue Effect 1	Total
Change in real GDP, \$m	-3.53	0.77	-2.76
Change in real GNI, \$m	-3.53	46.70	43.17
Change in Economic Welfare, \$m	-3.53	46.70	43.17
Change in aggregate labour	0	0	0
Change in real tourism output, \$m	-41.34	-0.10	-41.44
Change in real tourism GDP, \$m	-21.74	-0.05	-21.79
Change in tourism employment, person	-322	-1	-323

The results of imposing the PMC on inbound travel are given in Table 4. This table shows a bigger impact, through reduced tourism, on GDP, GNI and Economic Welfare than in the previous simulation. In addition, the negative impact on the tourism industry is much larger.

The impact through the substitution effect is the same as before.

The overall result is a smaller negative effect on GDP and a smaller positive effect on GNI and Economic Welfare. However, the overall impact on the economy is still clearly positive. The impact on the tourism industry is significantly negative.

**Table 5: Economic Effects of the PMC – Outbound Tourism
Tourism Substitution Effect, Tax Revenue Effect 2 and Domestic Tourism Substitution Effect**

National and Tourism Macro Variable	Outbound Expenditure Effect	Tax Revenue Effect 2	Domestic Tourism Substitution Effect	Total
Change in real GDP, \$m	2.19	1.27	3.35	6.81
Change in real GNI, \$m	2.19	1.27	3.35	6.81
Change in Economic Welfare, \$m	2.17	1.26	3.36	6.79
Change in aggregate labour	0	0	0	0
Change in real tourism output, \$m	-8.63	-4.69	44.59	31.27
Change in real tourism GDP, \$m	-4.54	-2.47	23.45	16.44
Change in tourism employment, person	-67	-37	347	244

The results of imposing the PMC on outbound travel are given in Table 5. As can be seen, there is a bigger effect on the switch to other goods and services as a result of the charge, and also a bigger effect on domestic tourism when Australian travellers switch to domestic tourism. Overall, there is a positive impact on GDP and GNI. There will also be a bigger positive effect on the tourism industry.

Table 6: Economic Effects of the PMC – Inbound and Outbound Tourism

National and Tourism Macro Variable	Inbound Expenditure Effect	Tax Revenue Effect 1	Outbound Expenditure Effect	Tax Revenue Effect 2	Domestic Tourism Substitution Effect	Total
Change in real GDP, \$m	-3.53	0.77	2.19	1.27	3.35	4.05
Change in real GNI, \$m	-3.53	46.70	2.19	1.27	3.35	49.98
Change in Economic Welfare, \$m	-3.53	46.70	2.17	1.26	3.36	49.96
Change in aggregate labour	0	0	0	0	0	0
Change in real tourism output, \$m	-41.34	-0.10	-8.63	-4.69	44.59	-10.18
Change in real tourism GDP, \$m	-21.74	-0.05	-4.54	-2.47	23.45	-5.35
Change in tourism employment, person	-322	-1	-67	-37	347	-79

The results of imposing the PMC on both inbound and outbound travel are given in Table 6. Once again there is small positive effect on GDP but the positive effect on GNI swamps this. Again the effect on the economy of imposing the PMC is positive. There is a negative effect on the tourism industry.

3. Discussion and Conclusions

These results show that raising a tax will provide a net benefit to the Australian economy, which run contrary to conventional wisdom. However, they show that taxing all persons travelling overseas, combined with a tourism market that has a larger outbound resident travel sector relative to international visitors, and is relatively non-responsive to price changes, will generate results that can provide net overall benefits to the destination economy. On balance, the tourism industry can gain or lose, depending on the balance of inbound and outbound travel, and on the extent to which domestic tourism is a substitute for outbound tourism.

In this particular case, the tourism industry loses from the PMC through its impact on inbound tourism; its primary source for growth. Regions more dependent on the international tourism sector (e.g. Tropical North Queensland) will lose more as a result of raising the PMC, relative to those regions who are less reliant on international tourism. Similarly, industries aligned with the international tourism sector lose unequivocally, while industries reliant on the Australian outbound travel sector (e.g. travel agents) also lose.

This suggests that the PMC works, in effect, as a transfer payment from tourism to non-tourism industries, as most of the total economic positive effects accrue to the non-tourism industries. This effect is magnified as there is no tourism-specific use of the extra Government revenue benefit from increasing taxation of non-residents, which although it is 'new income', is in effect an additional export tax, on top of existing taxes that international tourists pay.

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List of Abbreviations

ABS	Australian Bureau of Statistics
ACS	Australian Customs Service
AGD	Attorney General's Department
APD	Air Passenger Duty
ATSA	Australian Tourism Satellite Account
CGE	Computable General Equilibrium
DLR	German Aerospace Centre
GDP	Gross Domestic Product
GNI	Gross National Income
IATA	International Air Transport Association
MMRF	Monash Multi Regional Forecasting model
PMC	Passenger Movement Charge
STCRC	Sustainable Tourism Cooperative Research Centre
TSA	Tourism Satellite Account

APPENDICES

A.1 The Passenger Movement Charge – Background

The Passenger Movement Charge (PMC) is an Australian government charge on passengers departing Australia, irrespective of whether they intend to return to Australia or not. It was introduced in July 1995 and replaced the departure tax which had been in operation since October 1978. The PMC is levied under the Passenger Movement Charge Act 1978 and collected under the Passenger Movement Charge Collection Act 1978. It is administered by the Australian Customs Service (ACS) and is collected by airlines and shipping companies as part of their ticketing arrangements on behalf of ACS. The collected revenue is then passed on to the Australian government.

The PMC has been set at \$47 per passenger since 1 July 2008 (AGD, 2008). The original rate of departure tax was \$10 in 1978. Over the years the rate has been raised with an exception in the year 1988 (see Table A.1.1).

Table A.1.1: The Rate of the Departure Tax/Passenger Movement Charge (PMC)

Year	Departure tax/PMC per passenger	% Change
1978	\$10	-
1981	\$20	100%
1988	\$10	-50%
1991	\$20	100%
1994	\$25	25%
1995 ³	\$27	8%
1999	\$30	11%
2001	\$38	27%
2008	\$47	24%

Source: Bell (2001) and AGD (2008).

Table A.1.2: Revenue Collected from the Passenger Movement Charge (PMC), \$ million

Year	Total PMC Revenue, \$m ^a
2000-01	241.88
2001-02	283.64
2002-03	290.58
2003-04	329.79
2004-05	363.84
2005-06	374.57
2006-07	393.22
2007-08	420.00
2008-09	502.80

^a Source: *Annual Reports 2008–09, 2005–06 and 2002–03*, Australian Customs and Border Protection Service, various years.

³ PMC was introduced in July 1995 replacing the departure tax.

Table A.1.2 shows the total revenue collected from the PMC from 2000–01 to 2008–09. The PMC raised \$242 million and \$420 million in revenue in 2000–01 and 2007–08 respectively. The figures show a particularly strong increase in 2008–09, mainly due to the 24% increase in the PMC from \$38 to \$47 per passenger in 2008. This increase was to contribute to offsetting the cost of a range of aviation security initiatives in addition to recovery of the costs of processing passengers entering and leaving Australia, and the cost of issuing short-term visas overseas. The PMC is levied on international visitors to Australia and hence is an impost on tourism. It is also a tax on outbound tourism.

A.2 Results by States and Territories

This study is primarily concerned with the impacts of possible changes associated with the PMC at the Australia wide level. Modelling at the individual state and territory level was not done. However, it is possible to provide a breakdown of the national results by state and territory by allocating according to shares in variables, such as Tourism GDP and Tourism Output, as recorded in state and territory TSAs. This allocation will give a first estimate of the impact of changes in the PMC in a state or territory, though it will not pick up subtleties, such as how Queensland might be affected by changes in exchange rates and subsequent follow on effects on tourism, brought about by changes in the PMC.

The results at state and territory level are derived by disaggregating the national results by using state and territory share of total Australia’s tourism consumption as stated in state and territory TSAs (Pambudi *et al.*, 2009: Table 3, p.9).

Low Elasticity Case

Table A.2.1: Economic Effects of the PMC – Inbound Tourism

Inbound Expenditure Effect and Tax Revenue Effect 1

National and Tourism Macro Variable	NSW			VIC		
	Inbound Expenditure Effect	Tax Revenue Effect 1	Total	Inbound Expenditure Effect	Tax Revenue Effect 1	Total
Change in real GDP, \$m	-0.56	0.25	-0.32	-0.35	0.15	-0.20
Change in real GNI, \$m	-0.56	14.90	14.33	-0.35	9.34	8.99
Change in economic welfare, \$m	-0.56	14.90	14.33	-0.35	9.34	8.99
Change in aggregate labour	0	0	0	0	0	0
Change in real tourism output, \$m	-6.60	-0.03	-6.63	-4.14	-0.02	-4.16
Change in real tourism GDP, \$m	-3.47	-0.02	-3.49	-2.17	-0.01	-2.19
Change in tourism employment, person	-51	0	-52	-32	0	-32

Table A.2.1 continued.....

National and Tourism Macro Variable	QLD			SA		
	Inbound Expenditure Effect	Tax Revenue Effect 1	Total	Inbound Expenditure Effect	Tax Revenue Effect 1	Total
Change in real GDP, \$m	-0.45	0.20	-0.25	-0.10	0.04	-0.05
Change in real GNI, \$m	-0.45	11.86	11.41	-0.10	2.57	2.47
Change in economic welfare, \$m	-0.45	11.86	11.41	-0.10	2.57	2.47
Change in aggregate labour	0	0	0	0	0	0
Change in real tourism output, \$m	-5.25	-0.03	-5.28	-1.14	-0.01	-1.14
Change in real tourism GDP, \$m	-2.76	-0.01	-2.78	-0.60	0	-0.60
Change in tourism employment, person	-41	0	-41	-9	0	-9

Table A.2.1 continued.....

National and Tourism Macro Variable	WA			TAS		
	Inbound Expenditure Effect	Tax Revenue Effect 1	Total	Inbound Expenditure Effect	Tax Revenue Effect 1	Total
Change in real GDP, \$m	-0.18	0.08	-0.10	-0.05	0.02	-0.03
Change in real GNI, \$m	-0.18	4.67	4.49	-0.05	1.31	1.26
Change in economic welfare, \$m	-0.18	4.67	4.49	-0.05	1.31	1.26
Change in aggregate labour	0	0	0	0	0	0
Change in real tourism output, \$m	-2.07	-0.01	-2.08	-0.58	0	-0.58
Change in real tourism GDP, \$m	-1.09	-0.01	-1.09	-0.30	0	-0.31
Change in tourism employment, person	-16	0	-16	-5	0	-5

Table A.2.1 continued.....

National and Tourism Macro Variable	NT			ACT		
	Inbound Expenditure Effect	Tax Revenue Effect 1	Total	Inbound Expenditure Effect	Tax Revenue Effect 1	Total
Change in real GDP, \$m	-0.04	0.02	-0.02	-0.03	0.02	-0.02
Change in real GNI, \$m	-0.04	1.17	1.12	-0.03	0.89	0.85
Change in economic welfare, \$m	-0.04	1.17	1.12	-0.03	0.89	0.85
Change in aggregate labour	0	0	0	0	0	0
Change in real tourism output, \$m	-0.52	0	-0.52	-0.39	0	-0.39
Change in real tourism GDP, \$m	-0.27	0	-0.27	-0.21	0	-0.21
Change in tourism employment, person	-4	0	-4	-3	0	-3

Table A.2.1 continued.....

National and Tourism Macro Variable	AUS		
	Inbound Expenditure Effect	Tax Revenue Effect 1	Total
Change in real GDP, \$m	-1.77	0.77	-1.00
Change in real GNI, \$m	-1.77	46.7	44.93
Change in economic welfare, \$m	-1.77	46.7	44.93
Change in aggregate labour	0	0	0
Change in real tourism output, \$m	-20.68	-0.10	-20.78
Change in real tourism GDP, \$m	-10.87	-0.05	-10.93
Change in tourism employment, person	-161	-1	-162

Table A.2.2: Economic Effects of the PMC – Outbound Tourism**Tourism Substitution Effect, Tax Revenue Effect 2 and Domestic Tourism Substitution Effect**

National and Tourism Macro Variable	NSW				VIC			
	Outbound Expenditure Effect	Tax Revenue Effect 2	Domestic Tourism Substitution Effect	Total	Outbound Expenditure Effect	Tax Revenue Effect 2	Domestic Tourism Substitution Effect	Total
Change in real GDP, \$m	0.35	0.40	0.53	1.29	0.22	0.25	0.34	0.81
Change in real GNI, \$m	0.35	0.40	0.53	1.29	0.22	0.25	0.34	0.81
Change in economic welfare, \$m	0.35	0.40	0.54	1.28	0.22	0.25	0.34	0.81
Change in aggregate labour	0	0	0	0	0	0	0	0
Change in real tourism output, \$m	-1.38	-1.50	7.11	4.24	-0.86	-0.94	4.46	2.66
Change in real tourism GDP, \$m	-0.72	-0.79	3.74	2.23	-0.45	-0.49	2.34	1.40
Change in tourism employment, person	-11	-12	55	33	-7	-7	35	21

Table A.2.2 continued.....

National and Tourism Macro Variable	QLD				SA			
	Outbound Expenditure Effect	Tax Revenue Effect 2	Domestic Tourism Substitution Effect	Total	Outbound Expenditure Effect	Tax Revenue Effect 2	Domestic Tourism Substitution Effect	Total
Change in real GDP, \$m	0.28	0.32	0.43	1.03	0.06	0.07	0.09	0.22
Change in real GNI, \$m	0.28	0.32	0.43	1.03	0.06	0.07	0.09	0.22
Change in economic welfare, \$m	0.28	0.32	0.43	1.02	0.06	0.07	0.09	0.22
Change in aggregate labour	0	0	0	0	0	0	0	0
Change in real tourism output, \$m	-1.1	-1.19	5.66	3.37	-0.24	-0.26	1.23	0.73
Change in real tourism GDP, \$m	-0.58	-0.63	2.98	1.77	-0.12	-0.14	0.64	0.38
Change in tourism employment, person	-9	-9	44	26	-2	-2	10	6

Table A.2.2 continued.....

National and Tourism Macro Variable	WA				TAS			
	Outbound Expenditure Effect	Tax Revenue Effect 2	Domestic Tourism Substitution Effect	Total	Outbound Expenditure Effect	Tax Revenue Effect 2	Domestic Tourism Substitution Effect	Total
Change in real GDP, \$m	0.11	0.13	0.17	0.40	0.03	0.04	0.05	0.11
Change in real GNI, \$m	0.11	0.13	0.17	0.40	0.03	0.04	0.05	0.11
Change in economic welfare, \$m	0.11	0.13	0.17	0.40	0.03	0.04	0.05	0.11
Change in aggregate labour	0	0	0	0	0	0	0	0
Change in real tourism output, \$m	-0.43	-0.47	2.23	1.33	-0.12	-0.13	0.62	0.37
Change in real tourism GDP, \$m	-0.23	-0.25	1.17	0.7	-0.06	-0.07	0.33	0.20
Change in tourism employment, person	-3	-4	17	10	-1	-1	5	3

Table A.2.2 continued.....

National and Tourism Macro Variable	NT				ACT			
	Outbound Expenditure Effect	Tax Revenue Effect 2	Domestic Tourism Substitution Effect	Total	Outbound Expenditure Effect	Tax Revenue Effect 2	Domestic Tourism Substitution Effect	Total
Change in real GDP, \$m	0.03	0.03	0.04	0.10	0.02	0.02	0.03	0.08
Change in real GNI, \$m	0.03	0.03	0.04	0.10	0.02	0.02	0.03	0.08
Change in economic welfare, \$m	0.03	0.03	0.04	0.10	0.02	0.02	0.03	0.08
Change in aggregate labour	0	0	0	0	0	0	0	0
Change in real tourism output, \$m	-0.11	-0.12	0.56	0.33	-0.08	-0.09	0.42	0.25
Change in real tourism GDP, \$m	-0.06	-0.06	0.29	0.17	-0.04	-0.05	0.22	0.13
Change in tourism employment, person	-1	-1	4	3	-1	-1	3	2

Table A.2.2 continued.....

National and Tourism Macro Variable	AUS			
	Outbound Expenditure Effect	Tax Revenue Effect 2	Domestic Tourism Substitution Effect	Total
Change in real GDP, \$m	1.1	1.27	1.68	4.04
Change in real GNI, \$m	1.1	1.27	1.68	4.04
Change in economic welfare, \$m	1.08	1.26	1.68	4.03
Change in aggregate labour	0	0	0	0
Change in real tourism output, \$m	-4.31	-4.69	22.29	13.29
Change in real tourism GDP, \$m	-2.27	-2.47	11.72	6.99
Change in tourism employment, person	-34	-37	174	103

Table A.2.3: Economic Effects of the PMC – Inbound and Outbound Tourism

	NSW					
National and Tourism Macro Variable	Inbound Expenditure Effect	Tax Revenue Effect 1	Outbound Expenditure Effect	Tax Revenue Effect 2	Domestic Tourism Substitution Effect	Total
Change in real GDP, \$m	-0.56	0.25	0.35	0.40	0.53	0.97
Change in real GNI, \$m	-0.56	14.9	0.35	0.40	0.53	15.62
Change in economic welfare, \$m	-0.56	14.9	0.35	0.40	0.54	15.62
Change in aggregate labour	0	0	0	0	0	0
Change in real tourism output, \$m	-6.60	-0.03	-1.38	-1.50	7.11	-2.39
Change in real tourism GDP, \$m	-3.47	-0.02	-0.72	-0.79	3.74	-1.26
Change in tourism employment, person	-51	0	-11	-12	55	-19

Table A.2.3 continued.....

	VIC					
National and Tourism Macro Variable	Inbound Expenditure Effect	Tax Revenue Effect 1	Outbound Expenditure Effect	Tax Revenue Effect 2	Domestic Tourism Substitution Effect	Total
Change in real GDP, \$m	-0.35	0.15	0.22	0.25	0.34	0.61
Change in real GNI, \$m	-0.35	9.34	0.22	0.25	0.34	9.79
Change in economic welfare, \$m	-0.35	9.34	0.22	0.25	0.34	9.79
Change in aggregate labour	0	0	0	0	0	0
Change in real tourism output, \$m	-4.14	-0.02	-0.86	-0.94	4.46	-1.50
Change in real tourism GDP, \$m	-2.17	-0.01	-0.45	-0.49	2.34	-0.79
Change in tourism employment, person	-32	0	-7	-7	35	-12

Table A.2.3 continued.....

	QLD					
National and Tourism Macro Variable	Inbound Expenditure Effect	Tax Revenue Effect 1	Outbound Expenditure Effect	Tax Revenue Effect 2	Domestic Tourism Substitution Effect	Total
Change in real GDP, \$m	-0.45	0.20	0.28	0.32	0.43	0.77
Change in real GNI, \$m	-0.45	11.86	0.28	0.32	0.43	12.44
Change in economic welfare, \$m	-0.45	11.86	0.28	0.32	0.43	12.44
Change in aggregate labour	0	0	0	0	0	0
Change in real tourism output, \$m	-5.25	-0.03	-1.10	-1.19	5.66	-1.90
Change in real tourism GDP, \$m	-2.76	-0.01	-0.58	-0.63	2.98	-1.00
Change in tourism employment, person	-41	0	-9	-9	44	-15

Table A.2.3 continued.....

	SA					
National and Tourism Macro Variable	Inbound Expenditure Effect	Tax Revenue Effect 1	Outbound Expenditure Effect	Tax Revenue Effect 2	Domestic Tourism Substitution Effect	Total
Change in real GDP, \$m	-0.10	0.04	0.06	0.07	0.09	0.17
Change in real GNI, \$m	-0.10	2.57	0.06	0.07	0.09	2.69
Change in economic welfare, \$m	-0.10	2.57	0.06	0.07	0.09	2.69
Change in aggregate labour	0	0	0	0	0	0
Change in real tourism output, \$m	-1.14	-0.01	-0.24	-0.26	1.23	-0.41
Change in real tourism GDP, \$m	-0.60	0	-0.12	-0.14	0.64	-0.22
Change in tourism employment, person	-9	0	-2	-2	10	-3

Table A.2.3 continued.....

	WA					
National and Tourism Macro Variable	Inbound Expenditure Effect	Tax Revenue Effect 1	Outbound Expenditure Effect	Tax Revenue Effect 2	Domestic Tourism Substitution Effect	Total
Change in real GDP, \$m	-0.18	0.08	0.11	0.13	0.17	0.30
Change in real GNI, \$m	-0.18	4.67	0.11	0.13	0.17	4.90
Change in economic welfare, \$m	-0.18	4.67	0.11	0.13	0.17	4.90
Change in aggregate labour	0	0	0	0	0	0
Change in real tourism output, \$m	-2.07	-0.01	-0.43	-0.47	2.23	-0.75
Change in real tourism GDP, \$m	-1.09	-0.01	-0.23	-0.25	1.17	-0.39
Change in tourism employment, person	-16	0	-3	-4	17	-6

Table A.2.3 continued.....

	TAS					
National and Tourism Macro Variable	Inbound Expenditure Effect	Tax Revenue Effect 1	Outbound Expenditure Effect	Tax Revenue Effect 2	Domestic Tourism Substitution Effect	Total
Change in real GDP, \$m	-0.05	0.02	0.03	0.04	0.05	0.09
Change in real GNI, \$m	-0.05	1.31	0.03	0.04	0.05	1.37
Change in economic welfare, \$m	-0.05	1.31	0.03	0.04	0.05	1.37
Change in aggregate labour	0	0	0	0	0	0
Change in real tourism output, \$m	-0.58	0	-0.12	-0.13	0.62	-0.21
Change in real tourism GDP, \$m	-0.30	0	-0.06	-0.07	0.33	-0.11
Change in tourism employment, person	-5	0	-1	-1	5	-2

Table A.2.3 continued.....

NT						
National and Tourism Macro Variable	Inbound Expenditure Effect	Tax Revenue Effect 1	Outbound Expenditure Effect	Tax Revenue Effect 2	Domestic Tourism Substitution Effect	Total
Change in real GDP, \$m	-0.04	0.02	0.03	0.03	0.04	0.08
Change in real GNI, \$m	-0.04	1.17	0.03	0.03	0.04	1.22
Change in economic welfare, \$m	-0.04	1.17	0.03	0.03	0.04	1.22
Change in aggregate labour	0	0	0	0	0	0
Change in real tourism output, \$m	-0.52	0	-0.11	-0.12	0.56	-0.19
Change in real tourism GDP, \$m	-0.27	0	-0.06	-0.06	0.29	-0.10
Change in tourism employment, person	-4	0	-1	-1	4	-1

Table A.2.3 continued.....

ACT						
National and Tourism Macro Variable	Inbound Expenditure Effect	Tax Revenue Effect 1	Outbound Expenditure Effect	Tax Revenue Effect 2	Domestic Tourism Substitution Effect	Total
Change in real GDP, \$m	-0.03	0.02	0.02	0.02	0.03	0.06
Change in real GNI, \$m	-0.03	0.89	0.02	0.02	0.03	0.93
Change in economic welfare, \$m	-0.03	0.89	0.02	0.02	0.03	0.93
Change in aggregate labour	0	0	0	0	0	0
Change in real tourism output, \$m	-0.39	0	-0.08	-0.09	0.42	-0.14
Change in real tourism GDP, \$m	-0.21	0	-0.04	-0.05	0.22	-0.07
Change in tourism employment, person	-3	0	-1	-1	3	-1

Table A.2.3 continued.....

AUS						
National and Tourism Macro Variable	Inbound Expenditure Effect	Tax Revenue Effect 1	Outbound Expenditure Effect	Tax Revenue Effect 2	Domestic Tourism Substitution Effect	Total
Change in real GDP, \$m	-1.77	0.77	1.10	1.27	1.68	3.04
Change in real GNI, \$m	-1.77	46.7	1.10	1.27	1.68	48.97
Change in economic welfare, \$m	-1.77	46.7	1.08	1.26	1.68	48.96
Change in aggregate labour	0	0	0	0	0	0
Change in real tourism output, \$m	-20.68	-0.10	-4.31	-4.69	22.29	-7.49
Change in real tourism GDP, \$m	-10.87	-0.05	-2.27	-2.47	11.72	-3.94
Change in tourism employment, person	-161	-1	-34	-37	174	-58

High Elasticity Case

Table A.2.4: Economic Effects of the PMC – Inbound Tourism

Inbound Expenditure Effect and Tax Revenue Effect 1

National and Tourism Macro Variable	NSW			VIC		
	Inbound Expenditure Effect	Tax Revenue Effect 1	Total	Inbound Expenditure Effect	Tax Revenue Effect 1	Total
Change in real GDP, \$m	-1.13	0.25	-0.88	-0.71	0.15	-0.55
Change in real GNI, \$m	-1.13	14.9	13.77	-0.71	9.34	8.63
Change in economic welfare, \$m	-1.13	14.9	13.77	-0.71	9.34	8.63
Change in aggregate labour	0	0	0	0	0	0
Change in real tourism output, \$m	-13.19	-0.03	-13.22	-8.27	-0.02	-8.29
Change in real tourism GDP, \$m	-6.94	-0.02	-6.95	-4.35	-0.01	-4.36
Change in tourism employment, person	-103	0	-103	-64	0	-65

Table A.2.4 continued....

National and Tourism Macro Variable	QLD			SA		
	Inbound Expenditure Effect	Tax Revenue Effect 1	Total	Inbound Expenditure Effect	Tax Revenue Effect 1	Total
Change in real GDP, \$m	-0.90	0.20	-0.70	-0.19	0.04	-0.15
Change in real GNI, \$m	-0.90	11.86	10.96	-0.19	2.57	2.37
Change in economic welfare, \$m	-0.90	11.86	10.96	-0.19	2.57	2.37
Change in aggregate labour	0	0	0	0	0	0
Change in real tourism output, \$m	-10.5	-0.03	-10.53	-2.27	-0.01	-2.28
Change in real tourism GDP, \$m	-5.52	-0.01	-5.54	-1.20	0	-1.20
Change in tourism employment, person	-82	0	-82	-18	0	-18

Table A.2.4 continued....

National and Tourism Macro Variable	WA			TAS		
	Inbound Expenditure Effect	Tax Revenue Effect 1	Total	Inbound Expenditure Effect	Tax Revenue Effect 1	Total
Change in real GDP, \$m	-0.35	0.08	-0.28	-0.10	0.02	-0.08
Change in real GNI, \$m	-0.35	4.67	4.32	-0.10	1.31	1.21
Change in economic welfare, \$m	-0.35	4.67	4.32	-0.10	1.31	1.21
Change in aggregate labour	0	0	0	0	0	0
Change in real tourism output, \$m	-4.13	-0.01	-4.14	-1.16	0	-1.16
Change in real tourism GDP, \$m	-2.17	-0.01	-2.18	-0.61	0	-0.61
Change in tourism employment, person	-32	0	-32	-9	0	-9

Table A.2.4 continued....

National and Tourism Macro Variable	NT			ACT		
	Inbound Expenditure Effect	Tax Revenue Effect 1	Total	Inbound Expenditure Effect	Tax Revenue Effect 1	Total
Change in real GDP, \$m	-0.09	0.02	-0.07	-0.07	0.02	-0.05
Change in real GNI, \$m	-0.09	1.17	1.08	-0.07	0.89	0.82
Change in economic welfare, \$m	-0.09	1.17	1.08	-0.07	0.89	0.82
Change in aggregate labour	0	0	0	0	0	0
Change in real tourism output, \$m	-1.03	0	-1.04	-0.79	0	-0.79
Change in real tourism GDP, \$m	-0.54	0	-0.54	-0.41	0	-0.41
Change in tourism employment, person	-8	0	-8	-6	0	-6

Table A.2.4 continued.....

National and Tourism Macro Variable	AUS		
	Inbound Expenditure Effect	Tax Revenue Effect 1	Total
Change in real GDP, \$m	-3.53	0.77	-2.76
Change in real GNI, \$m	-3.53	46.7	43.17
Change in economic welfare, \$m	-3.53	46.7	43.17
Change in aggregate labour	0	0	0
Change in real tourism output, \$m	-41.34	-0.10	-41.44
Change in real tourism GDP, \$m	-21.74	-0.05	-21.79
Change in tourism employment, person	-322	-1	-323

Table A.2.5: Economic Effects of the PMC – Outbound Tourism

Tourism Substitution Effect, Tax Revenue Effect 2 and Domestic Tourism Substitution Effect

National and Tourism Macro Variable	NSW				VIC			
	Outbound Expenditure Effect	Tax Revenue Effect 2	Domestic Tourism Substitution Effect	Total	Outbound Expenditure Effect	Tax Revenue Effect 2	Domestic Tourism Substitution Effect	Total
Change in real GDP, \$m	0.70	0.40	1.07	2.17	0.44	0.25	0.67	1.36
Change in real GNI, \$m	0.70	0.40	1.07	2.17	0.44	0.25	0.67	1.36
Change in economic welfare, \$m	0.69	0.40	1.07	2.17	0.43	0.25	0.67	1.36
Change in aggregate labour	0	0	0	0	0	0	0	0
Change in real tourism output, \$m	-2.75	-1.5	14.22	9.97	-1.73	-0.94	8.92	6.25
Change in real tourism GDP, \$m	-1.45	-0.79	7.48	5.25	-0.91	-0.49	4.69	3.29
Change in tourism employment, person	-21	-12	111	78	-13	-7	69	49

Table A.2.5 continued....

National and Tourism Macro Variable	QLD				SA			
	Outbound Expenditure Effect	Tax Revenue Effect 2	Domestic Tourism Substitution Effect	Total	Outbound Expenditure Effect	Tax Revenue Effect 2	Domestic Tourism Substitution Effect	Total
Change in real GDP, \$m	0.56	0.32	0.85	1.73	0.12	0.07	0.18	0.37
Change in real GNI, \$m	0.56	0.32	0.85	1.73	0.12	0.07	0.18	0.37
Change in economic welfare, \$m	0.55	0.32	0.85	1.73	0.12	0.07	0.18	0.37
Change in aggregate labour	0	0	0	0	0	0	0	0
Change in real tourism output, \$m	-2.19	-1.19	11.33	7.94	-0.47	-0.26	2.45	1.72
Change in real tourism GDP, \$m	-1.15	-0.63	5.96	4.18	-0.25	-0.14	1.29	0.9
Change in tourism employment, person	-17	-9	88	62	-4	-2	19	13

Table A.2.5 continued....

National and Tourism Macro Variable	WA				TAS			
	Outbound Expenditure Effect	Tax Revenue Effect 2	Domestic Tourism Substitution Effect	Total	Outbound Expenditure Effect	Tax Revenue Effect 2	Domestic Tourism Substitution Effect	Total
Change in real GDP, \$m	0.22	0.13	0.34	0.68	0.06	0.04	0.09	0.19
Change in real GNI, \$m	0.22	0.13	0.34	0.68	0.06	0.04	0.09	0.19
Change in economic welfare, \$m	0.22	0.13	0.34	0.68	0.06	0.04	0.09	0.19
Change in aggregate labour	0	0	0	0	0	0	0	0
Change in real tourism output, \$m	-0.86	-0.47	4.46	3.13	-0.24	-0.13	1.25	0.88
Change in real tourism GDP, \$m	-0.45	-0.25	2.34	1.64	-0.13	-0.07	0.66	0.46
Change in tourism employment, person	-7	-4	35	24	-2	-1	10	7

Table A.2.5 continued.....

National and Tourism Macro Variable	NT				ACT			
	Outbound Expenditure Effect	Tax Revenue Effect 2	Domestic Tourism Substitution Effect	Total	Outbound Expenditure Effect	Tax Revenue Effect 2	Domestic Tourism Substitution Effect	Total
Change in real GDP, \$m	0.05	0.03	0.08	0.17	0.04	0.02	0.06	0.13
Change in real GNI, \$m	0.05	0.03	0.08	0.17	0.04	0.02	0.06	0.13
Change in economic welfare, \$m	0.05	0.03	0.08	0.17	0.04	0.02	0.06	0.13
Change in aggregate labour	0	0	0	0	0	0	0	0
Change in real tourism output, \$m	-0.22	-0.12	1.11	0.78	-0.16	-0.09	0.85	0.59
Change in real tourism GDP, \$m	-0.11	-0.06	0.59	0.41	-0.09	-0.05	0.45	0.31
Change in tourism employment, person	-2	-1	9	6	-1	-1	7	5

Table A.2.5 continued.....

National and Tourism Macro Variable	AUS			
	Outbound Expenditure Effect	Tax Revenue Effect 2	Domestic Tourism Substitution Effect	Total
Change in real GDP, \$m	2.19	1.27	3.35	6.81
Change in real GNI, \$m	2.19	1.27	3.35	6.81
Change in economic welfare, \$m	2.17	1.26	3.36	6.79
Change in aggregate labour	0	0	0	0
Change in real tourism output, \$m	-8.63	-4.69	44.59	31.27
Change in real tourism GDP, \$m	-4.54	-2.47	23.45	16.44
Change in tourism employment, person	-67	-37	347	244

Table A.2.6: Economic Effects of the PMC – Inbound and Outbound Tourism

	NSW					
National and Tourism Macro Variable	Inbound Expenditure Effect	Tax Revenue Effect 1	Outbound Expenditure Effect	Tax Revenue Effect 2	Domestic Tourism Substitution Effect	Total
Change in real GDP, \$m	-1.13	0.25	0.70	0.40	1.07	1.29
Change in real GNI, \$m	-1.13	14.90	0.70	0.40	1.07	15.94
Change in economic welfare, \$m	-1.13	14.90	0.69	0.40	1.07	15.94
Change in aggregate labour	0	0	0	0	0	0
Change in real tourism output, \$m	-13.19	-0.03	-2.75	-1.50	14.22	-3.25
Change in real tourism GDP, \$m	-6.94	-0.02	-1.45	-0.79	7.48	-1.71
Change in tourism employment, person	-103	0	-21	-12	111	-25

Table A.2.6 continued.....

	VIC					
National and Tourism Macro Variable	Inbound Expenditure Effect	Tax Revenue Effect 1	Outbound Expenditure Effect	Tax Revenue Effect 2	Domestic Tourism Substitution Effect	Total
Change in real GDP, \$m	-0.71	0.15	0.44	0.25	0.67	0.81
Change in real GNI, \$m	-0.71	9.34	0.44	0.25	0.67	10.00
Change in economic welfare, \$m	-0.71	9.34	0.43	0.25	0.67	9.99
Change in aggregate labour	0	0	0	0	0	0
Change in real tourism output, \$m	-8.27	-0.02	-1.73	-0.94	8.92	-2.04
Change in real tourism GDP, \$m	-4.35	-0.01	-0.91	-0.49	4.69	-1.07
Change in tourism employment, person	-64	0	-13	-7	69	-16

Table A.2.6 continued.....

	QLD					
National and Tourism Macro Variable	Inbound Expenditure Effect	Tax Revenue Effect 1	Outbound Expenditure Effect	Tax Revenue Effect 2	Domestic Tourism Substitution Effect	Total
Change in real GDP, \$m	-0.90	0.20	0.56	0.32	0.85	1.03
Change in real GNI, \$m	-0.90	11.86	0.56	0.32	0.85	12.7
Change in economic welfare, \$m	-0.90	11.86	0.55	0.32	0.85	12.69
Change in aggregate labour	0	0	0	0	0	0
Change in real tourism output, \$m	-10.5	-0.03	-2.19	-1.19	11.33	-2.58
Change in real tourism GDP, \$m	-5.52	-0.01	-1.15	-0.63	5.96	-1.36
Change in tourism employment, person	-82	0	-17	-9	88	-20

Table A.2.6 continued.....

SA						
National and Tourism Macro Variable	Inbound Expenditure Effect	Tax Revenue Effect 1	Outbound Expenditure Effect	Tax Revenue Effect 2	Domestic Tourism Substitution Effect	Total
Change in real GDP, \$m	-0.19	0.04	0.12	0.07	0.18	0.22
Change in real GNI, \$m	-0.19	2.57	0.12	0.07	0.18	2.75
Change in economic welfare, \$m	-0.19	2.57	0.12	0.07	0.18	2.75
Change in aggregate labour	0	0	0	0	0	0
Change in real tourism output, \$m	-2.27	-0.01	-0.47	-0.26	2.45	-0.56
Change in real tourism GDP, \$m	-1.2	0	-0.25	-0.14	1.29	-0.29
Change in tourism employment, person	-18	0	-4	-2	19	-4

Table A.2.6 continued.....

WA						
National and Tourism Macro Variable	Inbound Expenditure Effect	Tax Revenue Effect 1	Outbound Expenditure Effect	Tax Revenue Effect 2	Domestic Tourism Substitution Effect	Total
Change in real GDP, \$m	-0.35	0.08	0.22	0.13	0.34	0.41
Change in real GNI, \$m	-0.35	4.67	0.22	0.13	0.34	5.0
Change in economic welfare, \$m	-0.35	4.67	0.22	0.13	0.34	5.0
Change in aggregate labour	0	0	0	0	0	0
Change in real tourism output, \$m	-4.13	-0.01	-0.86	-0.47	4.46	-1.02
Change in real tourism GDP, \$m	-2.17	-0.01	-0.45	-0.25	2.34	-0.54
Change in tourism employment, person	-32	0	-7	-4	35	-8

Table A.2.6 continued.....

TAS						
National and Tourism Macro Variable	Inbound Expenditure Effect	Tax Revenue Effect 1	Outbound Expenditure Effect	Tax Revenue Effect 2	Domestic Tourism Substitution Effect	Total
Change in real GDP, \$m	-0.10	0.02	0.06	0.04	0.09	0.11
Change in real GNI, \$m	-0.10	1.31	0.06	0.04	0.09	1.40
Change in economic welfare, \$m	-0.10	1.31	0.06	0.04	0.09	1.40
Change in aggregate labour	0	0	0	0	0	0
Change in real tourism output, \$m	-1.16	0	-0.24	-0.13	1.25	-0.28
Change in real tourism GDP, \$m	-0.61	0	-0.13	-0.07	0.66	-0.15
Change in tourism employment, person	-9	0	-2	-1	10	-2

Table A.2.6 continued.....

	NT					
National and Tourism Macro Variable	Inbound Expenditure Effect	Tax Revenue Effect 1	Outbound Expenditure Effect	Tax Revenue Effect 2	Domestic Tourism Substitution Effect	Total
Change in real GDP, \$m	-0.09	0.02	0.05	0.03	0.08	0.10
Change in real GNI, \$m	-0.09	1.17	0.05	0.03	0.08	1.25
Change in economic welfare, \$m	-0.09	1.17	0.05	0.03	0.08	1.25
Change in aggregate labour	0	0	0	0	0	0
Change in real tourism output, \$m	-1.03	0	-0.22	-0.12	1.11	-0.25
Change in real tourism GDP, \$m	-0.54	0	-0.11	-0.06	0.59	-0.13
Change in tourism employment, person	-8	0	-2	-1	9	-2

Table A.2.6 continued.....

	ACT					
National and Tourism Macro Variable	Inbound Expenditure Effect	Tax Revenue Effect 1	Outbound Expenditure Effect	Tax Revenue Effect 2	Domestic Tourism Substitution Effect	Total
Change in real GDP, \$m	-0.07	0.02	0.04	0.02	0.06	0.08
Change in real GNI, \$m	-0.07	0.89	0.04	0.02	0.06	0.95
Change in economic welfare, \$m	-0.07	0.89	0.04	0.02	0.06	0.95
Change in aggregate labour	0	0	0	0	0	0
Change in real tourism output, \$m	-0.79	0	-0.16	-0.09	0.85	-0.19
Change in real tourism GDP, \$m	-0.41	0	-0.09	-0.05	0.45	-0.10
Change in tourism employment, person	-6	0	-1	-1	7	-2

Table A.2.6 continued.....

	AUS					
National and Tourism Macro Variable	Inbound Expenditure Effect	Tax Revenue Effect 1	Outbound Expenditure Effect	Tax Revenue Effect 2	Domestic Tourism Substitution Effect	Total
Change in real GDP, \$m	-3.53	0.77	2.19	1.27	3.35	4.05
Change in real GNI, \$m	-3.53	46.7	2.19	1.27	3.35	49.98
Change in economic welfare, \$m	-3.53	46.7	2.17	1.26	3.36	49.96
Change in aggregate labour	0	0	0	0	0	0
Change in real tourism output, \$m	-41.34	-0.10	-8.63	-4.69	44.59	-10.18
Change in real tourism GDP, \$m	-21.74	-0.05	-4.54	-2.47	23.45	-5.35
Change in tourism employment, person	-322	-1	-67	-37	347	-79

A.3 Industry Results

Low Elasticity Case

Table A.3.1: Economic Effects of the PMC – Inbound Tourism
Inbound Expenditure Effect and Tax Revenue Effect 1, % change

MMRF/M2RNSW Industry	Inbound Expenditure Effect	Tax Revenue Effect 1	Total
Agriculture	0.002	0.000	0.002
Mineral Ore	0.004	0.000	0.004
Black Coal	0.003	0.000	0.003
Oil	0.001	0.000	0.001
Nat Gas	0.001	0.000	0.001
Brown Coal	0.001	0.002	0.002
Food Drink	0.000	0.001	0.001
TCF Wood Paper	0.005	0.001	0.006
Chemicals	0.007	0.000	0.007
Petrol Refine	0.000	0.004	0.004
N Met prods	0.002	0.000	0.002
Metal Prods	0.011	0.001	0.012
Alum Magnes	0.006	0.000	0.006
Motor Veh	0.006	0.001	0.008
Other_man	0.008	0.001	0.009
Elect Black	0.001	0.002	0.003
Elect Brown	0.001	0.002	0.002
Elect Gas	0.001	0.001	0.003
Elect Other	0.001	0.002	0.003
Elect Supply	0.001	0.002	0.002
Urban Gas Dis	0.002	0.000	0.002
Water	0.000	0.000	0.000
Construction	0.000	-0.001	-0.001
Wholesale	0.002	0.001	0.003
Retail Trd	-0.003	0.000	-0.003
Repair	0.000	0.002	0.002
Hotels	-0.014	0.001	-0.012
Road Trans	-0.002	0.001	0.000
Rail Trans	-0.002	0.000	-0.001
Water Tran	0.016	0.001	0.018
Air Transp	-0.032	0.000	-0.031
Trans Serv	-0.001	0.000	-0.001
Communic	0.002	0.002	0.004
Fin Bus Ser	0.000	0.001	0.001
Insurance	0.001	0.000	0.001
Dwelling	0.000	0.000	0.000
Health	-0.002	-0.014	-0.016

MMRF/M2RNSW Industry	Inbound Expenditure Effect	Tax Revenue Effect 1	Total
Education	-0.005	-0.030	-0.035
Welfare	0.000	0.031	0.031
Cultural Rec	-0.003	-0.005	-0.008
Adm Oth Ser	-0.001	0.022	0.021

Table A.3.2: Economic Effects of the PMC – Outbound Tourism**Tourism Substitution Effect, Tax Revenue Effect 2 and Domestic Tourism Substitution Effect, % change**

MMRF/M2RNSW Industry	Outbound Expenditure Effect	Tax Revenue Effect 2	Domestic Tourism Substitution Effect	Total
Agriculture	-0.002	0.000	0.000	-0.002
Mineral Ore	-0.004	0.000	0.000	-0.004
Black Coal	-0.003	0.000	0.000	-0.003
Oil	0.000	0.000	0.000	0.000
Nat Gas	0.000	0.000	0.000	0.000
Brown Coal	-0.001	0.002	0.000	0.001
Food Drink	0.000	0.001	0.001	0.002
TCF Wood Paper	-0.004	0.001	0.000	-0.003
Chemicals	-0.006	0.000	-0.001	-0.006
Petrol Refine	0.000	0.006	0.003	0.009
N met prods	-0.002	0.000	0.000	-0.002
Metal Prods	-0.010	0.001	-0.001	-0.010
Alum Magnes	-0.006	0.000	0.000	-0.006
Motor Veh	-0.006	0.002	0.001	-0.004
Other man	-0.008	0.002	0.000	-0.006
Elect Black	0.000	0.002	0.000	0.001
Elect Brown	-0.001	0.002	0.000	0.001
Elect Gas	-0.001	0.002	0.000	0.000
Elect Other	-0.001	0.002	0.000	0.001
Elect Supply	0.000	0.002	0.000	0.001
Urban Gas Dis	0.000	0.000	-0.002	-0.003
Water	0.001	0.000	-0.001	0.000
Construction	0.000	-0.001	0.000	-0.001
Wholesale	-0.001	0.001	0.000	-0.001
Retail Trd	0.005	0.000	-0.001	0.005
Repair	0.003	0.002	-0.001	0.004
Hotels	0.007	0.005	0.017	0.029
Road Trans	0.000	0.002	0.000	0.002
Rail Trans	0.001	0.000	0.000	0.001
Water Tran	-0.015	0.002	0.000	-0.014
Air Transp	-0.019	0.003	0.010	-0.006
Trans Serv	-0.009	0.001	0.006	-0.001
Communic	0.000	0.002	-0.001	0.000
Fin Bus Ser	0.000	0.001	0.000	0.000
Insurance	0.003	-0.001	-0.004	-0.002
Dwelling	0.000	0.000	0.000	0.000
Health	0.006	-0.018	-0.003	-0.016
Education	0.002	-0.036	-0.001	-0.035
Welfare	0.005	0.036	-0.004	0.036
Cultural Rec	0.008	-0.006	-0.002	0.000
Adm Oth Ser	0.004	0.026	-0.003	0.027

Table A.3.3: Economic Effects of the PMC- Inbound and Outbound Tourism, % change

MMRF/M2RNSW Industry	Inbound Expenditure Effect	Tax Revenue Effect 1	Outbound Expenditure Effect	Tax Revenue Effect 2	Domestic Tourism Substitution Effect	Total
Agriculture	0.002	0.000	-0.002	0.000	0.000	0.001
Mineral Ore	0.004	0.000	-0.004	0.000	0.000	0.000
Black Coal	0.003	0.000	-0.003	0.000	0.000	0.001
Oil	0.001	0.000	0.000	0.000	0.000	0.001
Nat Gas	0.001	0.000	0.000	0.000	0.000	0.000
Brown Coal	0.001	0.002	-0.001	0.002	0.000	0.003
Food Drink	0.000	0.000	0.000	0.001	0.001	0.003
TCF Wood Paper	0.005	0.001	-0.004	0.001	0.000	0.003
Chemicals	0.007	0.000	-0.006	0.000	-0.001	0.001
Petrol Refine	0.000	0.004	0.000	0.006	0.003	0.013
N met prods	0.002	0.000	-0.002	0.000	0.000	0.000
Metal Prods	0.011	0.001	-0.010	0.001	-0.001	0.002
Alum Magnes	0.006	0.000	-0.006	0.000	0.000	0.000
Motor Veh	0.006	0.001	-0.006	0.002	0.001	0.004
Other man	0.008	0.001	-0.008	0.002	0.000	0.002
Elect Black	0.001	0.002	0.000	0.002	0.000	0.004
Elect Brown	0.001	0.002	-0.001	0.002	0.000	0.003
Elect Gas	0.001	0.001	-0.001	0.002	0.000	0.003
Elect Other	0.001	0.002	-0.001	0.002	0.000	0.004
Elect Supply	0.001	0.002	0.000	0.002	0.000	0.004
Urban Gas Dis	0.002	0.000	0.000	0.000	-0.002	0.000
Water	0.000	0.000	0.001	0.000	-0.001	0.000
Construction	0.000	-0.001	0.000	-0.001	0.000	-0.002
Wholesale	0.002	0.001	-0.001	0.001	0.000	0.002
Retail Trd	-0.003	0.000	0.005	0.000	-0.001	0.002
Repair	0.000	0.002	0.003	0.002	-0.001	0.006
Hotels	-0.014	0.001	0.007	0.005	0.017	0.016
Road Trans	-0.002	0.001	0.000	0.002	0.000	0.001
Rail Trans	-0.002	0.000	0.001	0.000	0.000	0.000
Water Tran	0.016	0.001	-0.015	0.002	0.000	0.004
Air Transp	-0.032	0.000	-0.019	0.003	0.010	-0.038
Trans Serv	-0.001	0.000	-0.009	0.001	0.006	-0.002
Communic	0.002	0.002	0.000	0.002	-0.001	0.004
Fin Bus Ser	0.000	0.001	0.000	0.001	0.000	0.002
Insurance	0.001	0.000	0.003	-0.001	-0.004	-0.001
Dwelling	0.000	0.000	0.000	0.000	0.000	0.000
Health	-0.002	-0.014	0.006	-0.018	-0.003	-0.032
Education	-0.005	-0.030	0.002	-0.036	-0.001	-0.070
Welfare	0.000	0.031	0.005	0.036	-0.004	0.067
Cultural Rec	-0.003	-0.005	0.008	-0.006	-0.002	-0.008
Adm Oth Ser	-0.001	0.022	0.004	0.026	-0.003	0.048

High Elasticity Case

Table A.3.4: Economic Effects of the PMC – Inbound Tourism

Inbound Expenditure Effect and Tax Revenue Effect 1, % change

MMRF/M2RNSW Industry	Inbound Expenditure Effect	Tax Revenue Effect 1	Total
Agriculture	0.004	0.000	0.005
Mineral Ore	0.008	0.000	0.008
Black Coal	0.006	0.000	0.007
Oil	0.001	0.000	0.001
Nat Gas	0.001	0.000	0.001
Brown Coal	0.001	0.002	0.003
Food Drink	0.001	0.000	0.001
TCF Wood Paper	0.009	0.001	0.010
Chemicals	0.013	0.000	0.014
Petrol Refine	0.000	0.004	0.005
N met prods	0.004	0.000	0.004
Metal Prods	0.022	0.001	0.023
Alum Magnes	0.011	0.000	0.011
Motor Veh	0.013	0.001	0.014
Other man	0.015	0.001	0.017
Elect Black	0.002	0.002	0.004
Elect Brown	0.001	0.002	0.003
Elect Gas	0.002	0.001	0.004
Elect Other	0.002	0.002	0.004
Elect Supply	0.001	0.002	0.003
Urban Gas Dis	0.005	0.000	0.005
Water	0.000	0.000	0.000
Construction	0.000	-0.001	-0.002
Wholesale	0.005	0.001	0.005
Retail Trd	-0.006	0.000	-0.005
Repair	-0.001	0.002	0.001
Hotels	-0.027	0.001	-0.026
Road Trans	-0.003	0.001	-0.002
Rail Trans	-0.003	0.000	-0.003
Water Tran	0.033	0.001	0.034
Air Transp	-0.063	0.000	-0.063
Trans Serv	-0.002	0.000	-0.002
Communic	0.003	0.002	0.005
Fin Bus Ser	0.001	0.001	0.002
Insurance	0.001	0.000	0.002
Dwelling	0.000	0.000	0.000
Health	-0.004	-0.014	-0.018
Education	-0.010	-0.030	-0.040
Welfare	0.000	0.031	0.030

MMRF/M2RNSW Industry	Inbound Expenditure Effect	Tax Revenue Effect 1	Total
Cultural Rec	-0.006	-0.005	-0.011
Adm Oth Ser	-0.002	0.022	0.020

Table A.3.5: Economic Effects of the PMC – Outbound Tourism
Tourism Substitution Effect, Tax Revenue Effect 2 and Domestic Tourism Substitution Effect, % change

MMRF/M2RNSW Industry	Outbound Expenditure Effect	Tax Revenue Effect 2	Domestic Tourism Substitution Effect	Total
Agriculture	-0.004	0.000	0.000	-0.004
Mineral Ore	-0.008	0.000	0.000	-0.008
Black Coal	-0.007	0.000	0.000	-0.006
Oil	-0.001	0.000	0.000	0.000
Nat Gas	-0.001	0.000	0.000	-0.001
Brown Coal	-0.002	0.002	0.000	0.000
Food Drink	0.000	0.001	0.002	0.003
TCF Wood Paper	-0.009	0.001	0.000	-0.007
Chemicals	-0.011	0.000	-0.002	-0.013
Petrol Refine	0.000	0.006	0.006	0.012
N met prods	-0.005	0.000	0.001	-0.004
Metal Prods	-0.020	0.001	-0.001	-0.020
Alum Magnes	-0.012	0.000	0.000	-0.012
Motor Veh	-0.012	0.002	0.001	-0.009
Other man	-0.017	0.002	0.001	-0.015
Elect Black	0.000	0.002	-0.001	0.001
Elect Brown	-0.002	0.002	0.000	0.000
Elect Gas	-0.003	0.002	0.000	-0.001
Elect Other	-0.001	0.002	0.000	0.000
Elect Supply	-0.001	0.002	0.000	0.001
Urban Gas Dis	0.000	0.000	-0.004	-0.005
Water	0.001	0.000	-0.001	0.000
Construction	0.000	-0.001	0.001	-0.001
Wholesale	-0.002	0.001	-0.001	-0.002
Retail Trd	0.010	0.000	-0.001	0.009
Repair	0.005	0.002	-0.001	0.006
Hotels	0.013	0.005	0.034	0.052
Road Trans	-0.001	0.002	0.001	0.002
Rail Trans	0.003	0.000	0.000	0.003
Water Tran	-0.030	0.002	-0.001	-0.029
Air Transp	-0.038	0.003	0.019	-0.016
Trans Serv	-0.018	0.001	0.012	-0.004
Communic	0.000	0.002	-0.003	-0.001
Fin Bus Ser	0.000	0.001	-0.001	0.000
Insurance	0.006	-0.001	-0.008	-0.003
Dwelling	0.000	0.000	0.000	0.000
Health	0.012	-0.018	-0.007	-0.013
Education	0.005	-0.036	-0.002	-0.033
Welfare	0.009	0.036	-0.009	0.037
Cultural Rec	0.017	-0.006	-0.003	0.007
Adm Oth Ser	0.008	0.026	-0.006	0.028

Table A.3.6: Economic Effects of the PMC- Inbound and Outbound Tourism, % change

MMRF/M2RNSW Industry	Inbound Expenditure Effect	Tax Revenue Effect 1	Outbound Expenditure Effect	Tax Revenue Effect 2	Domestic Tourism Substitution Effect	Total
Agriculture	0.004	0.000	-0.004	0.000	0.000	0.001
Mineral Ore	0.008	0.000	-0.008	0.000	0.000	0.000
Black Coal	0.006	0.000	-0.007	0.000	0.000	0.000
Oil	0.001	0.000	-0.001	0.000	0.000	0.001
Nat Gas	0.001	0.000	-0.001	0.000	0.000	0.000
Brown Coal	0.001	0.002	-0.002	0.002	0.000	0.003
Food Drink	0.001	0.000	0.000	0.001	0.002	0.004
TCF Wood Paper	0.009	0.001	-0.009	0.001	0.000	0.003
Chemicals	0.013	0.000	-0.011	0.000	-0.002	0.001
Petrol Refine	0.000	0.004	0.000	0.006	0.006	0.016
N met prods	0.004	0.000	-0.005	0.000	0.001	0.000
Metal Prods	0.022	0.001	-0.020	0.001	-0.001	0.002
Alum Magnes	0.011	0.000	-0.012	0.000	0.000	0.000
Motor Veh	0.013	0.001	-0.012	0.002	0.001	0.005
Other man	0.015	0.001	-0.017	0.002	0.001	0.002
Elect Black	0.002	0.002	0.000	0.002	-0.001	0.005
Elect Brown	0.001	0.002	-0.002	0.002	0.000	0.003
Elect Gas	0.002	0.001	-0.003	0.002	0.000	0.003
Elect Other	0.002	0.002	-0.001	0.002	0.000	0.004
Elect Supply	0.001	0.002	-0.001	0.002	0.000	0.004
Urban Gas Dis	0.005	0.000	0.000	0.000	-0.004	0.000
Water	0.000	0.000	0.001	0.000	-0.001	0.000
Construction	0.000	-0.001	0.000	-0.001	0.001	-0.002
Wholesale	0.005	0.001	-0.002	0.001	-0.001	0.003
Retail Trd	-0.006	0.000	0.010	0.000	-0.001	0.004
Repair	-0.001	0.002	0.005	0.002	-0.001	0.008
Hotels	-0.027	0.001	0.013	0.005	0.034	0.026
Road Trans	-0.003	0.001	-0.001	0.002	0.001	0.000
Rail Trans	-0.003	0.000	0.003	0.000	0.000	0.000
Water Tran	0.033	0.001	-0.030	0.002	-0.001	0.005
Air Transp	-0.063	0.000	-0.038	0.003	0.019	-0.079
Trans Serv	-0.002	0.000	-0.018	0.001	0.012	-0.006
Communic	0.003	0.002	0.000	0.002	-0.003	0.004
Fin Bus Ser	0.001	0.001	0.000	0.001	-0.001	0.002
Insurance	0.001	0.000	0.006	-0.001	-0.008	-0.001
Dwelling	0.000	0.000	0.000	0.000	0.000	0.000
Health	-0.004	-0.014	0.012	-0.018	-0.007	-0.031
Education	-0.010	-0.030	0.005	-0.036	-0.002	-0.073
Welfare	0.000	0.031	0.009	0.036	-0.009	0.067
Cultural Rec	-0.006	-0.005	0.017	-0.006	-0.003	-0.004
Adm Oth Ser	-0.002	0.022	0.008	0.026	-0.006	0.048

In Tables A.3.1 to A.3.6 results are given by industry, MMRF/M2RNSW model industrial breakdown. These are not very disaggregated, and to obtain a more disaggregated breakdown consistent with the TSA, further work would need to be done. Results are given for both the low and high demand elasticity cases, and the impacts on the industries of interest are higher in the high demand elasticity case, as expected.

This breakdown provides results for two main tourism industries – Hotels, and Air Transport. As expected, hotels are negatively impacted by the PMC in the inbound case, and positively affected in the outbound case – overall, the effect is positive. Air Transport is negatively affected in both cases – again, this is to be expected, as the PMC reduces transport in both directions.

A.4 Analysis of the Impacts and Model Simulations

In this section, the types of impacts that can be expected to come about as a result of Australia changing the rate at which the PMC is levied are outlined.

It is important to distinguish between the impacts on inbound and outbound tourism – they are not the mirror image of each other.

There are two main effects that come about as a result of a country setting a tax on inbound tourism. Suppose the tax goes up.

1. The *tax revenue effect* – the home country gains from getting residents of other countries to pay its taxes, (thus National Income and Economic Welfare rise) and
2. The *tourism benefits effect* – the home country loses because benefits from tourism are reduced due to decreased visitation.

It is likely that the effect on the economy as a whole will be positive for a tax increase and the effect on the tourism industry will be negative. It is not clear what the balance of these effects will be.

Analysis can be couched in terms of consumers' and producers' surplus, which corresponds to "Economic Welfare" in the simulations. This is the standard way of analysing how much better off or worse off a country is. In this case, consumers' surplus accrues to foreign travellers and is not counted. Producers' surplus plus taxes is given by the difference between the prices less average cost.

Suppose a tax is levied, pushing up the price of tourism. Australia gains additional tax revenues through the PMC, but there is a reduction in the benefits it gains from tourism.

Due to the reduction in visitation, the tourism industry will lose output employment and profits as a result of the tax, and other existing taxes levied on tourism (e.g. GST) are reduced.

If the elasticity of demand for inbound tourism is low, the tax effect is likely to outweigh the reduced tourism effect, since the country will gain extra tax revenues from all the inbound travellers and it will suffer only a small loss on tourism benefits, unless the benefits of tourism are large. Given that the gains that Australia will make from additional expenditure of foreign travellers will need to be offset by the costs of providing the travellers with goods and services, the net welfare gains from tourism expenditure will be modest normally. In short, the country gains from taxing inbound tourism.

If the elasticity of demand is high there will be a smaller effect on tax revenue), but the negative effect on tourism expenditure will be larger than for the previous case). In this case, the balance from imposing the tax could be negative. The country could lose and the tourism industry will also lose.

On balance, it is very likely that the increase in the PMC charge will be positive for the country, since the country gains all of the tax revenue, while much of the reduction in tourism results in reduced costs for the tourism industry – the net margin in tourism, (including taxes and profits) is not very big.

In sum:

- The tourism effect will result in a reduction in GDP, GNI and Economic Welfare, and Tourism Industry Output and Employment
- The tax revenue effect will result in an ambiguous effect on GDP, but a positive effect on GNI and Economic Welfare, and an ambiguous effect on the Tourism Industry.
- On balance, the effect on GDP will be ambiguous, strongly positive on GNI and Economic Welfare, and negative on the Tourism Industry.

In the case of outbound tourism, the effects are different.

Three effects are present.

1 *The tax revenue effect* – in this case, one group of Australian residents (travellers) will face higher taxes and one group (who are the beneficiaries of the higher PMC) will face lower taxes. This reflects the assumption of budget neutrality adopted in the modelling, so that additional tax revenues from one source (the PMC) are fully offset by an increase in spending elsewhere.

2 *The tourism expenditure effect* – Given that the tax increases the price of outbound tourism, Australian residents spend less on foreign tourism and more on other goods and services.

3 *The domestic tourism substitution effect*, where Australian residents who forego outbound travel because of higher prices associated with the PMC, substitute domestic tourism for other goods and services.

There is a tax revenue effect, but unlike the case for inbound tourism, this will not be large for the Australian economy, since it is a case of taxing one product more (outbound tourism) and spending the same on other goods and services – on balance, there is no net tax change since the budget must be balanced. There will be some impact on GDP and GNI – the impact on this could be either way.

There will be a reduction in spending on overseas tourism, but there will be an increase in spending on home goods and services. Since Australian goods and services are taxed while overseas travel is not taxed by Australia, it is likely that there would be a positive effect on GDP/GNI.

Finally, there could be an effect on domestic tourism. It is possible that there will be an equal increase in domestic tourism, or some of the expenditure may be switched to other goods and services purchased by Australian residents instead of tourism related products and services. Both these cases can be allowed for. However, there will be a positive effect on welfare and

probably on GDP arising from a switch to domestic tourism or goods because of the relatively high taxes on domestic tourism.

In sum:

- The tourism effect is likely to be positive for GDP, GNI and Economic Welfare because there is a switch from untaxed foreign tourism to goods and services which are taxed. The tourism industry will not be affected much.
- The tax revenue effect will not be large as it switches from one source of tax to another.
- The domestic tourism substitution effect could result in GDP, GNI and Economic Welfare for Australia rising as tourism is a relatively high taxed service. This will be positive for the Australian tourism industry.
- On balance, Australia will gain in terms of GDP, GNI and Economic Welfare, and the Tourism Industry will also gain.

Considering the PMC overall

- The effect on GNI and Economic Benefits is likely to be positive, given the importance of the PMC resulting in foreign residents rather than Australian residents paying tax.
- The effect on the Tourism Industry will be mixed, but if outbound tourism is greater than inbound tourism, and if outbound tourists switch their expenditure to domestic tourism, increasing the PMC will have a positive effect on tourism industry output and employment.

Given the ways tourism is taxed, the economy will gain from an increase in the PMC, and the tourism industry will gain from the switch from foreign to domestic tourism. There will be an increase in tax receipts as a result of the PMC, unless demand is very elastic. This means that there will have to be some compensating effects on other goods or the budget will not balance. For the purpose of our simulations, it is assumed that government spending on goods and services is increased across the board by an amount equivalent to the increase in government revenues. Alternatively the level of taxes on other goods could be reduced. The difference would not affect the results by very much given that overall taxes in the economy remain the same. The basic simulations are ones in which both capital and labour in the economy is fixed. This is a good starting point because it abstracts from other changes that might take place. Simulations are done with variable employment, to allow for the case of unemployment, and the case of variable capital.

In the simulations undertaken for this report:

- It is assumed that the PMC is fully passed on to travellers.
- The simulations suppose a 20% increase in the PMC increasing it to \$56.4 per passenger.
- The simulations proceed by estimating how the PMC change will affect the cost of air travel (the air fare), and an elasticity is applied to estimate how much tourism expenditure changes, both for outbound and inbound. Then the changes in output resulting from the changes in tax are simulated, and finally the full changes are summed.
- The simulations are done using a model which is calibrated to 2004–05. The model results are then updated to 2008–09 to allow for the growth in inbound and outbound tourism expenditure since then.

- The Economic Welfare impacts from increased tourism expenditure tend to be much less than the change in expenditure itself – this is because the goods tourists use must be paid for. If there is unemployment or high tourism taxes, the tourism impacts will be larger, in particular for the case of inelastic demand for inbound tourism, and the negative effects of increasing the PMC will be larger.

In the simulations, the impacts on the tourism industry itself will be larger than the impacts on the economy as a whole, since there are no general equilibrium effects (negative effects on crowded out industries) allowed for; the impacts on the tourism industry on its own are simulated. The impacts on GDP/GNI are lower by comparison, since these are the net impacts, positive and negative, on production in total for the economy as a whole allowing for industry interactive effects.

The measure of net Economic Welfare is the best measure of how much better or worse off Australia is. This is often but not always smaller than the effect on GDP or on GNI, because, when production requires additional capital or labour, this has a cost, which needs to be deducted from the value of the output. When the simulation involves fixed capital and labour, and there are no transfers from abroad, GDP, GNI and net welfare will be close or identical.

A.5 The M2RNSW Model

This study uses a tourism focussed CGE model called M2RNSW, developed under a research project funded by the Sustainable Tourism Cooperative Research Centre (STCRC).

M2RNSW is an adaptation of the Monash Multi-Regional Forecasting (MMRF) model of the Australian economy developed by the Centre of Policy Studies at Monash University. A detailed description of the MMRF model is given in Peter et al. (1996).

An industry classification of 42 non-tourism industries is used for the M2RNSW model, which is then extended to a 56-industry tourism version of the model by introducing fourteen tourism industries. These fourteen new tourism industries are distinguished by the source of the traveller (four categories – intrastate, interstate, overseas and outbound) and the purpose of travel (four categories – holiday, visiting friends and relatives, business and conferences and other; for outbound there are only two purposes – business and households).

Production, consumption and investment in M2RNSW are each modelled in accordance with conventional economic theory. M2RNSW treats economic agents as operating in a competitive market. Producers choose their inputs to minimize 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 maximize utility subject to their budget constraints. The model also covers the behaviour of import and export agents. Two tiers of government are included, with the federal government interacting with each region, providing public services, taxing and distributing transfer payments. For a more detailed description of the M2RNSW model, see Dwyer et al. (2006a).

M2RNSW has been applied to assess the economic effects of events and world tourism crises (Dwyer, Forsyth and Spurr, 2006a, b; Dwyer, Forsyth, Spurr and Ho, 2006a, b; Dwyer and Forsyth 2008); as well as to measure tourism productivity and economic yield (Dwyer, Forsyth and Spurr, 2007; Dwyer et al., 2005); and contribution of tourism by origin market to a state economy (Dwyer et al., 2003).

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