The impacts of Australia’s departure tax: Tourism versus the economy?

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HIGHLIGHTS
- We estimate the tourism flow and expenditure effects of the recent increase in Australia’s Passenger Movement Charge (PMC).
- We develop a framework to distinguish the effects of the increased PMC on the wider economy and on different tourism markets.
- Implications of the modelling results for the validity of industry criticisms of the PMC are discussed.
- Informs stakeholders of gainers and losers from departure tax increases in tourism destinations generally.

ABSTRACT
This study estimates the flow and expenditure effects of the recent increase in Australia’s Passenger Movement Charge (PMC), as well as the economic impacts on the Australian economy and the tourism industry. After discussing the nature of the PMC, it outlines the types of industry stakeholder concerns as to its effects on tourism both before and after the recent increase. It then presents a framework developed by the authors that can be used to distinguish the effects of the increased PMC on the wider economy and on different tourism markets. A computable general equilibrium model is then used to estimate the economic impacts of the increased charge on different Australian tourism markets – inbound, outbound and domestic. The implications of the modelling results for the validity of the industry criticisms of the PMC are discussed. The results confirm that the tourism industry will suffer, though it also indicates that the Australian economy will gain – thus there is a clash between the industry and wider economic interests. The types of issues addressed in this paper can inform policy making regarding the gainers and losers from departure tax increases in tourism destinations generally.

1. Introduction

Australia recently, and controversially, has increased the amount of the Departure Tax (the Passenger Movement Charge or PMC) levied on all travellers leaving Australia. Despite the ongoing concerns of tourism and transport stakeholders that the PMC is effectively an export tax that makes Australia a less competitive tourism destination, the government recently announced a 17 per cent increase in this tax from Aus$47 to Aus$55 per passenger, to take effect from July 1, 2012. The PMC is of particular ongoing concern to the tourism sector. Australia is regarded already as a high priced destination. With a high value of the Australian dollar supported by a prolonged boom in mining exports, and a carbon tax/missions trading scheme which began on July 1 2012, tourism stakeholders have argued that the additional charge will further impact adversely on inbound tourism, and further reduce the economic significance and employment potential of the nation’s tourism industry.

The tourism industry’s concerns need also to be seen in the light of the fact that the PMC is also a tax on outbound tourism — indeed for Australia, outbound tourism is larger, in visitor terms, than inbound tourism. Acting as a deterrent to outbound tourism, the PMC to an extent will encourage domestic tourism as a substitute. The tourism industry has not taken much notice of this effect.

This debate is occurring in the context of an ongoing weakening in the tourism share of the Australian economy. Tourism
remains Australia's largest services export industry, generating Aus$23.7 billion in 2010–11 or 9.0 per cent of total services exports (Australian Bureau of Statistics, 2011). While the industry remains a significant one to Australia, there are concerns that its share of global international travel is in decline. Overall, international arrivals to Australia grew by 0.7 per cent a year over the period 2000–2009. This is significantly slower than the previous average annual growth rates, 9.4 per cent (1980s) and 9.1 per cent (1990s). Over the past decade, the industry has underperformed against the broader Australian economy, with tourism’s share of GDP decreasing from 3.4 per cent in 2000–01 to 2.4 per cent in 2010–11. At the same time, tourism’s share of total Australian exports has fallen, from a peak of nearly 13 per cent in 2003–04 to 8.3 per cent in 2008–09 (Tourism Research Australia, 2012).

Overall, long-term average annual growth for total tourism consumption in Australia is forecast at 1.4 per cent in the period 2009–2020, much lower than the thirty year average of 3.2 per cent a year, indicating a declining path of tourism share towards 2020 (Tourism Research Australia, 2012).

Looked at globally, departure, and more specifically, aviation taxes have become increasingly widespread in recent years. European countries that have imposed aviation taxes include Denmark, Germany, Austria, France, Malta, UK and the Netherlands. Some Asian countries, e.g. India, have also imposed such taxes, or increased existing ones (van Egmund & de Jong, 2010). Whatever their form, aviation taxes have proved to be controversial. Amidst great publicity, the Dutch aviation tax was abandoned in its first year of operation (Veldhuis, 2010). A study of the effects of the German aviation tax by the German Aerospace Center (DLR) claimed that it reduced Gross Value Added and employment as well as tax revenues at all levels, from federal, to state and municipality (Berster et al., 2010). Meanwhile, there has been much criticism by, for example by the World Travel and Tourism Council, of the decision of the UK government to increase the Air Passenger Duty (APD) again in 2012, with claims of resulting huge losses to tourism and the UK economy (WTTC, 2012a, 2012b).

Although these studies have reinforced criticism of aviation taxes by tourism stakeholders, the assessment techniques and findings of these studies can be questionable. While they highlight the negative effects of aviation taxes on tourism output (and other economic variables), they take tourism revenues as a benefit, giving no weight to the costs of providing tourism output. Thus, they provide no estimate of the net gains or losses to the economy from their imposition. Each of these studies also employs input-output analysis, an approach guaranteed to produce negative results for any tax imposed on the tourism industry (Dwyer, Forsyth, & Spurr, 2004; Forsyth, Niemeier, & Dwyer, 2012). These studies do not take into account the substitution effect of domestic tourism for outbound tourism. Moreover, since the different gainers and losers from aviation taxes are not sufficiently distinguished in the above analyses, they are of limited value in helping us understand the issues involved in assessing the effects of the increased charge in Australia as this depends importantly on the balance of the gains and losses accruing to stakeholders.

The study presented in this paper provides an assessment of the increase in Australia’s PMC on the Australian economy and on the tourism industry. It has five aims:

- First, to discuss the nature of Australia’s PMC;
- Second, to outline the types of industry stakeholder concerns as to the effects of the PMC on tourism, both before and after the recent increase;
- Third, to present a framework developed by the authors that can be used to distinguish the effects of the increased PMC on the wider economy and on different tourism markets. This framework highlights the conflicting interests of the tourism industry and the broader Australian economy;
- Fourth, using a computable general equilibrium (CGE) model, to estimate the economic impacts, on both the tourism industry and the wider economy, of the increased charge on different tourism markets — the inbound market, the outbound market, which has had much less attention from stakeholders and other researchers; and,
- Fifth, to discuss the implications of the modelling results for the validity of industry criticisms of the PMC.

This discussion is directly relevant to assessing the effects on the tourism industry and the wider economy of departure taxes that exist or are being introduced in other countries. It is argued that the types of issues addressed in this paper can inform policy making regarding the gainers and losers from increases in departure or aviation taxes in tourism destinations generally.

2. The Passenger Movement Charge

The PMC is a government charge on passengers departing Australia, including departing international visitors and Australian residents, irrespective of whether they intend to return to Australia or not. 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 (Australian Government, 2008). The collected revenue is then remitted to the Australian government. The PMC was set at $47 per passenger since 1 July 2008, but was increased to $55 on July 1, 2012.

The PMC was projected to yield $615.47 million in 2010–11 (Australian Customs and Border Protection Services, 2011) and is projected to generate between $800 million and $900 million in government revenues in 2011/12. The increase will take the annual revenues from the Departure tax to over $1 billion by 2015/16.

There can be several motivations for a government to impose a tax on air passengers. These include: as an environmental charge; to provide funds for specific passenger related services; to raise general government revenues; and to fund specific non-transport initiatives (Keen & Strand, 2007). The PMC charge contains elements of each of the latter three objectives. Unlike in other countries, such as the UK, the tax has not been regarded as an environmental charge. The charge has been mainly justified, in the past, as a means to recover the costs of border control functions such as customs, immigration and quarantine, but recently it has become more of a revenue raising measure. In 2005 the Productivity Commission, a government advisory body, estimated that at a rate of $38 in 2002–03 it just covered costs (Productivity Commission, 2005). Recently, a proportion (10 per cent) of the revenues raised by the increase in PMC has been earmarked for assistance to the tourism industry in the form of additional funding to Australia’s national tourism organisation, Tourism Australia ($61 million over 4 years) to assist with their push into Asia through an Asian Marketing Fund Tourism Australia (2012).

2.1. Industry concerns

Five main types of criticisms of the charge have been voiced by the travelling public and the tourism industry in particular. These are:

1. The Australian tourism industry is already heavily taxed. The key taxes affecting tourism price competitiveness are the Passenger Movement Charge (PMC), visa fees and the Goods and Services Tax (GST). There has been an increasing trend in Australia to levy increased taxes and charges on international visitors for revenue raising purposes. Tourism generated
The results of a recent survey conducted among senior executives of Australian tourism operators reveals significant concern about the impact of taxes on international travellers, state-based taxes and other taxation measures (Tourism and Transport Forum, 2011). It is claimed that these undermine investor confidence which is essential to achieving sustainable tourism development (Tourism Research Australia, 2012). Industry stakeholders believe that reform of Australia’s tax system (Commonwealth of Australia, 2010) flagged the PMC as a tax ‘to monitor in the future’, but to date industry concerns have not been addressed to assess their validity.

Unfortunately, the issues relating to the surplus generated by the PMC and potential further hypothecation have not been examined in any detail since the Productivity Commission Report in 2005. The Henry Report into Australia in any detail since the Productivity Commission Report in 2005. The most significant increase in taxes on tourism came when Australia moved to a Goods and Services (VAT) Tax in 2000. Increases in the PMC and visa fees in the 2008–9 and 2009–10 Commonwealth Budgets have resulted in an additional $240.5 million tax burden in 2009–10 alone. Tourism is the only sector, other than education, which is subject to GST on its exports.

The timing of the increase has been questioned. Tourism stakeholders argue that the PMC has become a general revenue measure, no longer hypothecated against its original stated purpose of funding the border agencies at the primary line, including customs and border protection, quarantine and immigration (Nancarrow, 2011). The tourism industry has argued that these activities have a public good aspect and should not be subject to user pays (TFf, 2011). The industry position also is that since it generates the money, it should reap a significant portion of the rewards (BARA, 2012). Only ten per cent of the increase ($61 million over four years) will go to the tourism industry, by way of the new “Asia Tourism Marketing Fund”).

5. Several critics of Australia’s PMC have claimed that the failures of aviation taxes overseas have been ignored (TFf, 2011). The relevance for Australia of these so called policy failures is, however, not clear. The failed Dutch aviation tax has been highlighted as a lesson for Australia. It needs to be recognised, however, that the diversity of transportation options in Europe means travellers can and do seek out alternatives whenever one country unilaterally imposes an air passenger tax, a situation very different from Australia which is a remote island continent. Following the introduction of the flight tax in the Netherlands, around 30 per cent of Dutch travellers decided to fly from airports outside the Netherlands to avoid the ticket tax (Gordijn, 2010). Continental European countries that have initiated aviation taxes would likely have had more success if they had imposed such taxes together. In contrast to the European context, it is easier for larger, more remote countries such as Australia to implement an aviation tax that may provide greater benefits to the economy, given that the amount of competition from foreign airports is quite limited.

Two general observations may be made regarding industry concerns as to the effects of the increased PMC on Australia’s tourism industry. One is that a major focus of industry commentary has been on the potential adverse effects of the PMC on inbound tourism. However, since the PMC applies to all travel from Australia it will also have consequences for outbound and domestic travel. Given some degree of substitutability between outbound and domestic tourism, the increased PMC may be expected to provide benefits for Australia’s domestic tourism. However, there seems to have been little acknowledgement of the opportunities that the increased PMC presents for the domestic market.

A second observation regarding the industry focus on the deleterious effects of the tax increase on inbound tourism is that there appears to be an implicit assumption that inbound tourism flows are price elastic. Several commentators refer to the ‘high sensitivity’ of international tourists to increased prices (ATEC, 2012). The greater the price elasticity of demand for Australian tourism, the greater will be the disincentive to visit Australia and the greater the negative impacts of the increased PMC on the tourism industry. However, as the discussion below highlights, contrary to industry stakeholder assumptions, the evidence is that inbound tourism demand for travel to Australia is relatively price inelastic.

In order to assess the effects of the increased PMC on the tourism industry and the wider economy, we need to consider the channels through which the increased PMC will affect each of these respectively. There are two main channels of influence. One is the additional tax revenue accruing to Australia associated with the payment of the PMC by ‘foreigners’. The other relates to the effects of the increased charge on tourism flows and tourism expenditure. The effects of the increase in the PMC on tourist numbers depend on assumptions about the price elasticity of demand of those tourism markets affected by the additional tax. The increased PMC may be expected to affect tourism flows, both inbound and outbound. In addition, given that domestic tourism is at least a partial substitute for outbound tourism, we can expect tourism flows to also be affected in this market segment.

3. A framework for analysis

There are two main channels through which an increase in the PMC affects tourism and the wider economy. The tax revenue effect. Two main groups of persons are subject to the PMC – foreign residents who come to Australia as tourists and...
Australian residents who travel overseas. Under the assumption of a government balanced budget, which is currently the policy of both major political parties in Australia over the economic cycle, the additional tax revenues earned will be spent on publically provided goods and services. Those tax revenues received from foreign residents will lead to increases in Gross Domestic Product (GDP), Gross National Income (GNI), employment and economic welfare.

The tourism expenditure effect. Each of three tourism markets will experience a change in numbers and expenditure as a result of the increased PMC, with consequent impacts on GDP, GNI and employment in both the tourism industry and the wider economy. These markets are inbound tourism (a likely reduction in numbers and expenditure), outbound tourism (a likely reduction in outbound numbers leading to an increase in domestic expenditure) and domestic tourism (some increase in numbers and expenditure depending on its substitutability for reduced outbound tourism).

To better understand these types of effects we consider how they operate within each of three different tourism markets.

3.1. Inbound tourism

Both the tax revenue effect and the tourism expenditure effect are relevant here. Australia gains additional tax revenues from the PMC, but since this pushes up the price of tourism in Australia, there will be a reduction in inbound tourism demand and thus potentially limit the benefits to the nation from inbound tourism.

With a balanced budget fiscal policy the additional PMC will result in increased government expenditure with positive economic impacts on GDP, GNI, employment and economic welfare. Any nation gains from getting residents of other countries to pay its taxes. As Tisdell (1983) has earlier demonstrated, unlike the economic impacts on GDP, GNI, employment and economic welfare.

A priori, it is not clear what the balance of these effects will be for any destination that imposes or increases an aviation tax. The net effects will depend on the relative sizes of a country’s inbound, outbound, and domestic tourism industries, existing tax structures, the extent of substitutability between outbound and domestic tourism, and the price elasticities of demand of different tourism markets. To determine the net effects, economic modelling is required.

3.3. The relevance of price elasticity of demand

Underpinning the extent of expenditure effects is the extent to which tourist numbers from any market segment decrease in response to a given change in the PMC. This will depend on the price elasticity of demand for inbound and outbound tourism. The higher the price elasticity value, the more responsive are tourism numbers and associated tourism expenditure to a given change in the PMC.

Tourism demand elasticity estimates differ widely in the literature, and there is no accepted value available for this measure across different visitor markets. Estimates of price elasticities of demand vary depending according to variables such as: the definition of price; the form of the model used; the number of explanatory variables in the demand model; whether prices have been adjusted for exchange rate changes; whether the cost of transportation is included in the definition of price; and several other factors (Dwyer, Forsyth, & Dwyer, 2010: pp. 43–44). An early meta-analysis undertaken by Crouch (1995) of the results of 80 studies internationally found that demand was only somewhat sensitive to price with the means of own price elasticities ranging between −0.37 and −0.84. The overall mean was −0.63; that is, a 10 per cent change in the cost of the ground content of a trip to an international destination, results in a 6.3 per cent change in visitation.

Several estimates of the price elasticity of the demand for Australian tourism have been undertaken over the years (Morley, 1998; Seetaram, 2012). However, the most recent estimates of the price elasticity of demand for Australia consistently indicate that inbound travel demand is price inelastic in the short run. Carmody (2002) estimated that the overall demand for inbound tourism was −0.83, or slightly inelastic. Kulendran and Divisekera (2007) using a dynamic error correction model found that the demand for travel to Australia from the key markets of New Zealand, Japan, UK and USA ranged between −0.15 and −0.96, while Kulendran and Dwyer (2009); using cointegration analysis, estimated a range between −0.30 and −0.94 for the same four origin markets. Tourism Research Australia has estimated the price elasticity of demand for inbound tourism to be −0.8 (Tourism Research Australia, 2011). Most recently, Seetaram (2012) using a sophisticated dynamic panel data cointegration technique and employing the Kiviet estimation approach, has estimated the price elasticity of inbound tourist arrivals to be −0.62 in the short run, while in the long run it is more elastic (−1.90).
On the other hand, the estimation of elasticities associated with outbound travel has been relatively neglected by researchers. At the pan-national level, estimates show that air travel demand is fairly insensitive to price, with the price elasticities ranging between −0.4 and −0.9 (Pearce, 2009, chap. 1.8). Dargay and Hanly (2001) in their study of UK outbound traffic estimated fares elasticity of about −0.6. A recent study by Seetaram (2012), using a constructed destination price competitiveness index, has estimated the price elasticity of demand for outbound travel from Australia to be −0.91 in the short run and −2.4 in the long run.

For present purposes we will assume that the price elasticity of demand for Australian tourism, ranges between −0.5 and −1.0, for both inbound and outbound tourism. This assumption appears to be broadly consistent with the empirical findings as detailed above.

3.4. Economic impacts of the increased PMC

In the simulations undertaken for this study, it is assumed that the PMC is fully passed on to travellers (alternative rates of pass-through can be modelled). The simulations suppose a 17% increase in the PMC from $47 to $55 per passenger. The simulations proceed by estimating how the PMC increase will affect the cost of a trip to Australia (ground content plus air fare) or of an outbound trip in the case of an Australian resident. An elasticity measure is then applied to estimate how much tourism expenditure changes, both for outbound and inbound travel. The impacts on the tourism industry and the wider economy resulting from the increased PMC are then simulated, and the full changes are summed to determine the net effects.

This study uses a tourism focused CGE model which was developed under a research project funded by the Sustainable Tourism Cooperative Research Centre (STCRC) in Australia (Dwyer, Forsyth, Spurr, & Ho, 2003, 2006). The tourism CGE model was developed on the base of the MMRF model (Adams, 2008) with a construction of destination price competitiveness index, has estimated the tourism sector is in relation to how much tourism expenditure changes, both for outbound and inbound travel. The impacts on the tourism industry and the wider economy resulting from the increased PMC are then simulated, and the full changes are summed to determine the net effects.

Apart from the modification of the database, the theoretical structure of the CGE core remains unchanged. The MMRF model is a CGE model of all of the Australian State and Territory economies with supply and demand explicitly captured. The model description is well documented in Adams (2008), the main features of the MMRF model include:

- Households maximising utility by choosing the cheapest source for their purchases;

### Table 1: Total Intermediate use

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<tr>
<th>Industry</th>
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<th>J2</th>
<th>J3</th>
<th>...</th>
<th>Jn</th>
<th>Dtour</th>
<th>Etour</th>
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<tr>
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<tr>
<td>ETour</td>
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<td>Tot_ETour</td>
<td>Tot_ETour</td>
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### Table 2: Australian Production

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<th>Total</th>
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<th>C2</th>
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<th>Tot_Dtour</th>
<th>Tot_ETour</th>
<th>C</th>
<th>I</th>
<th>G</th>
<th>E</th>
</tr>
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</table>

Fig. 1. Database structure of the tourism CGE model.
Firms maximising profits by sourcing intermediate inputs from the cheapest source;

- Firms also choosing the right mix of labour, capital and land to reduce the cost of primary inputs by a substitution among these primary inputs based on individual cost factors;
- Strong responses by firms to large changes in input prices by undertaking technological innovation;
- Domestic producers facing a downward sloping export demand curve to reflect an assumption of a small open economy;
- Investors being cautious in their investment decisions. For every subsequent increment in capital growth, investors require a higher rate of return to supply the same amount of additional investment; and
- Investors also minimising their costs by choosing the cheapest source as do producers, except that investment activity does not require primary inputs.

As seen in Fig. 1, the tourism module focuses on the demand side, which provides necessity to analyse impacts on, or changes to, demands for tourism such as this project. Tourism activity is recognised by inter-state, intra-state, inbound and outbound tourism. While inter-state and intra-state tourism demands are driven by relative prices and domestic income, inbound tourism demand is modelled to have a downward sloping demand curve as all other exports.

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

All simulations assume:
- fixed national employment and flexible real wage
- fixed real (international) trade balance and a flexible exchange rate
- fixed capital stock with flexible rate of return
- fixed total investment
- government budget neutrality

The closure has a typical assumption of short run for capital such that capital is fixed in a short run. However, the closure explicitly assumes that the timeframe is not so short that real wage rate could actually adjust to clear the market so that full employment could be achieved. In a way, the closure represents a medium run rather than a standard short run or long run closure.

It is useful to distinguish the different economic impacts of the PMC increase which are associated with inbound, outbound and domestic tourism.

4. Results

4.1. Effect of the increased PMC on tourism numbers and expenditure

Table 1 provides estimates of the effect on tourism numbers and expenditure, assuming price elasticities of demand of –0.5 and –1.0.

In 2010-11 revenue collected from the PMC was $615.47 million (Australian Customs and Border Protection Services, 2011, Table 52, page 202). Given this amount, other things equal, the 17% increase in the tax would generate $104.63 in additional tax revenue. In the same year, the number of inbound tourists to Australia was 5.5 million, while the number of outbound tourists was 6.3 million. Of the total flows, inbound tourism comprised 47% and outbound tourism 53% respectively (Australian Bureau of Statistics, 2011). We estimate that the revenues generated from
the increased PMC (the tax revenue effect) are thus $49.18 million collected from inbound tourists departing Australia while $55.45 million is generated from outbound travel by Australian residents. These are first round effects relate to the direct expenditure only.

The effects of the increased PMC on visitor numbers and their expenditure will depend on the price elasticities of demand for inbound and outbound tourism. Assuming a price elasticity of demand of −0.5, the reduction in tourism expenditure is $24.59 million for inbound tourism (the inbound expenditure effect) and $27.73 million for outbound travel (the outbound expenditure effect). If all of the reduction in expenditure on outbound tourism were to be diverted to spending on domestic tourism, the domestic tourism expenditure effect would be $27.73 million. Alternatively, if it is assumed that the foregone outbound expenditure is evenly divided between domestic tourism and purchases of (non-tourism) goods and services, the domestic tourism expenditure effect would be $13.87 million.

Assuming a price elasticity of demand of −1.0, the reduction in tourism expenditure is $49.18 million for inbound tourism (the inbound expenditure effect) and $55.46 million for outbound travel (the outbound expenditure effect). If all of the reduction in outbound tourism is diverted to spending on domestic tourism, the domestic tourism expenditure effect would be $55.46 million. If it is assumed that the foregone outbound expenditure is evenly divided between domestic tourism and purchases of (non-tourism) goods and services, the domestic tourism expenditure effect would be $27.73 million.

4.2. Economic impacts of the increased PMC

4.2.1. Inbound tourism effects

Table 2 shows the results of the PMC increase associated with inbound tourism. The effects are broken up into the impacts of reduced tourism (expenditure effect inbound) and the impacts of the changes in tax revenues (tax revenue effect inbound).

4.2.2. Expenditure effects

The expenditure effects as listed in Table 2 relate to projections of the effect of the reduction in inbound tourism on national macro variables and tourism industry macro variables. As argued above, the rise in the PMC leads to a fall in inbound tourism expenditure of $24.59 million, assuming a price elasticity of demand of −0.5 and $49.18 million using an elasticity measure of −1.0. These amounts are the demand shocks applied to the CGE model to estimate the economic impacts of the increased PMC.

The impact on GDP from decreased tourism is −$1.89 million or −$3.80 million, depending on the assumed value of the price elasticity of demand for inbound tourism. The impact on Gross National Income (GNI) is also −$1.89 million or −$3.80 million according to the assumed price elasticity value. GNI is the total value of goods and services produced within a country (i.e. its GDP), together with its income received from other countries (notably interest and dividends), less similar payments made to other countries. When foreign residents pay the increased PMC, the production of goods and services may stay the same, but the income available to the country will go up – the residents will gain from the fact that foreigners are paying the tax, not its residents. This effect is captured in GNI.

Neither GDP nor GNI is necessarily a good measure of how much better off a country is as a result of the increased PMC. The best indicator of how much better or worse off a country is as a result of a policy change is the change in economic welfare, rather than the change in GDP, which measures the change in output, or GNI, which measures the change in income. When GDP goes up as a result of use of additional factor inputs, there will be additional output, but there will be an additional cost, since these inputs are not costless. To measure how much better off a country is, one needs a welfare measure. The MMRF model does not have an explicit welfare measure – however a good proxy for welfare can be developed by subtracting the cost of the additional inputs from the value of the additional output (Dixon, 2009). It is also necessary to include any terms of trade effects – this is done in the welfare measure. In this study, the simulations are for the economy with fixed labour and capital, and thus GNI and economic welfare are equal (in general these are different). This corresponds to a case in which there is full employment – which is currently the case in Australia.

Table 2 also shows the effects of the increase in PMC on the tourism industry itself. There is a fall in Tourist Output of $22.10 million (elasticity of −0.5) or of $44.20 million (elasticity of −1.0). Tourism output is measured at ‘basic prices’, that is, it excludes all taxes and margins on tourism product. Tourism GDP declines by $11.62 million or $23.24 million. Tourism GDP represents the total market value of domestically produced goods and services consumed by visitors after deducting the cost of goods and services used up in the process of production. Tourism employment, representing direct employment involved in the production of goods and services, declines by 172 or 344 jobs depending on the elasticity value.

4.2.3. Taxation revenue effects

The increase in the PMC adds to the government’s revenue from taxation. The additional tax revenue from the increased PMC increases Gross Domestic Product (GDP) by $0.83 million. Much more substantial is the income effect, the increased tax revenue increases Gross National Income (GNI) and economic welfare by $49.92 million since non-residents rather than Australians are paying the tax. As noted, tourism is one of only two export industries (with education), that are subject to Australia’s Goods and Services Tax (GST). As a highly taxed industry the inbound tax revenue effect may be expected to be large. In contrast, the inbound tax revenue effects resulting from the change in real tourism

<table>
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<th>National macro variables</th>
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<th>Tax revenue effect: inbound</th>
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<td>$ million</td>
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<td>Change in real GDP, $m</td>
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<td>Change in real GNI, $m</td>
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<td>Change in tax revenue, $m</td>
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<th>Tourism macro variables</th>
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</thead>
<tbody>
<tr>
<td>Change in real tourism output, $m</td>
<td>−22.10</td>
<td>−44.20</td>
<td>−0.10</td>
</tr>
<tr>
<td>Change in real tourism GDP, $m</td>
<td>−11.62</td>
<td>−23.24</td>
<td>−0.05</td>
</tr>
<tr>
<td>Change in tourism employment, persons</td>
<td>−172</td>
<td>−344</td>
<td>−173</td>
</tr>
</tbody>
</table>

Table 2 Economic effects of a 17 per cent increase in the PMC – inbound tourism ($million).

Tourism macro variables between row 4 and row 5.
Source: authors’ estimates.
Elasticity of demand is the degree to which residents of Australia regard a domestic holiday as a substitute for overseas travel. To our knowledge no quantitative research has is publicly available on the extent to which residents of Australia regard a domestic holiday as a substitute for international travel. The Expenditure effect is positive in the case of a reduction in the price of tourism, the gains to the industry are halved.

### 4.2.4. Total inbound effect
Overall, there is a negative impact on GDP of −$1.06 million or −$2.97 million, depending on the assumed elasticity value, and a large positive impact on GNI and Economic Welfare of $48.03 million or $46.12 million, associated with inbound tourism. Australia, overall, gains from increasing the PMC. However, at the industry level, tourism industry output, tourism GDP and tourism employment are reduced, by $22.00 million, $11.57 million and 173 jobs, respectively using an assumed price elasticity of demand of −0.5, and $44.10 million, $23.19 million and 346 jobs for an elasticity of −1.0.

### 4.2.5. Outbound tourism effects
The increased PMC will reduce outbound tourism by Australian residents. Some of this reduction will increase the demand for domestic tourism depending on the extent to which residents regard domestic tourism as a close substitute for overseas travel. To our knowledge no quantitative research has is publicly available on the degree to which residents of Australia regard a domestic holiday as a substitute for international travel. The Expenditure effect is positive in the case of a reduction in the price of tourism, the gains to the industry are halved.

### 4.3. Overall effect of changes in the PMC
The overall effect from increasing the PMC, through its impacts on inbound, outbound and domestic travel, can be summarised. The results in Table 4 assume a price elasticity of demand of −0.5 whilst those in Table 5 assume an elasticity of −1.0.

### Table 3
Economic effects of the PMC – outbound and domestic tourism ($ millions).

<table>
<thead>
<tr>
<th>National macro variable</th>
<th>Expenditure effect: outbound</th>
<th>Tax revenue effect: outbound</th>
<th>Domestic tourism diversion effect</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$e = −0.5</td>
<td>$e = −1.0</td>
<td></td>
</tr>
<tr>
<td>Change in real GDP, $m</td>
<td>1.12</td>
<td>2.24</td>
<td>1.29</td>
</tr>
<tr>
<td>Change in real GNI, $m</td>
<td>1.12</td>
<td>2.24</td>
<td>1.29</td>
</tr>
<tr>
<td>Change in economic welfare, $m</td>
<td>1.12</td>
<td>2.24</td>
<td>1.29</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1.72 on 100% diversion</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.86 on 50% diversion</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3.44 on 100% diversion</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3.44 on 50% diversion</td>
</tr>
<tr>
<td>Tourism macro variable</td>
<td></td>
<td></td>
<td>4.74 on 100% diversion</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2.49 on 50% diversion</td>
</tr>
<tr>
<td>Change in real tourism output, $m</td>
<td>−4.36</td>
<td>−8.76</td>
<td>−4.74</td>
</tr>
<tr>
<td>Change in real tourism GDP, $m</td>
<td>−2.30</td>
<td>−4.60</td>
<td>−2.49</td>
</tr>
<tr>
<td>Change in tourism employment, person</td>
<td>−34</td>
<td>−68</td>
<td>−37</td>
</tr>
</tbody>
</table>

Source: authors’ estimates.
into account tourism output declines by $8.55 million, tourism real GDP by $4.50 million and tourism employment by 66 full time jobs. Assuming, on the other hand, that only 50 per cent of intending outbound tourists switch to domestic tourism as a result of the increased PMC, the losses to tourism will be greater. On this scenario, tourism output declines by $19.93 million, real tourism GDP declines by $10.48 million and 155 tourism jobs are lost. Losses to the tourism industry occur largely because the decline as a result of reduced inbound travel exceeds the positive effect on domestic tourism diverted from outbound travel.

Table 5 shows that the increased PMC has slightly reduced economy wide impacts associated with the greater elasticity of demand, with real GDP projected to increase by $4.00 million or $2.28 million and real GNI and economic welfare projected to increase by $53.09 million or $51.37 million depending on the extent of diversion from outbound to domestic tourism. Again the net positive impact on the economy as a whole results primarily from the tax revenue effect. The same as for the previous table, this effect is sufficient to outweigh other impacts.

There are greater negative impacts on Australian tourism output, tourism GDP and tourism employment for the higher elasticity assumption. Even if domestic tourism gains all of the reduced outbound tourism expenditure, tourism output declines by $12.30 million, tourism real GDP by $6.46 million and tourism employment by 95 full time jobs. These negative results are due primarily to the negative inbound expenditure effects. Assuming that only 50 per cent of intending outbound tourists now switches to domestic tourism as a result of the increased PMC, the losses to tourism will be greater. Tourism output falls by $35.05 million, real tourism GDP by $18.42 million and 273 tourism jobs are lost. Losses to the tourism industry again occur largely because the negative inbound expenditure effects outweigh the domestic expenditure effects.

5. Discussion

The increased PMC has positive impacts on the Australian economy, in terms of GNI and welfare. This is not at all surprising. Because the tax is levied on foreign residents, there is a transfer of real resources from overseas to Australia: Australia is much better off through getting other countries to pay its taxes. Effectively, this is a rise in the terms of trade – which is reflected more clearly by GNI.

Not surprisingly, a rise in the PMC is negative for Australia’s inbound tourism industry and for outbound tourism. Losses to the tourism industry are greater the less domestic tourism is perceived to be a good substitute for outbound tourism. The domestic tourism substitution effect is positive, as expected. 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, a switch to domestic tourism may have slightly larger impacts than greater spending on non-tourism goods and services. Sensitivity analysis can of course be undertaken using a range of assumptions about the extent of diversion, in addition to the 100 per 50 per cent assumptions employed in this study. However, even assuming complete substitutability the tourism industry, unambiguously, will be a net loser from the PMC increase taking into account its negative impacts on both inbound and outbound tourism.

The present study employs the same values for the price elasticity of demand ($e = -0.5$, and $e = -1.0$) across all inbound and outbound markets. Given the likelihood of differences in price elasticities of demand for visitors from Australia’s different source markets, any such differences will impact on the numbers of visitors from these markets and hence affect the expenditure and tax effect estimates of the increased PMC on the wider economy and the tourism industry. Similarly, it is likely that the price elasticities of demand for outbound travel differ as between destinations, affecting both the level of outbound tourism and the amount of diversion to domestic tourism. At the present time we do not have universally accepted estimates of price elasticities of demand at the required market segment levels for Australia’s inbound or outbound markets. Notwithstanding this, the framework presented can allow for different elasticity measures to be employed for both inbound and outbound markets. As our knowledge of the relevant elasticities increases, so too can the framework be used to employ this knowledge to estimate the relevant expenditure and tax effects on increases in the PMC.

Two specific industry concerns deserve further analysis. One is that the PMC itself, as well as increases in it, have a greater proportionate effect on total trip expenditure to and from New Zealand, Australia’s major tourism source market and thus will impact this market more substantially than other inbound markets. As the TTF has pointed out, the PMC comprises up to 30 per cent of the ticket price on some Australia-New Zealand routes (TTF, 2012a). Relevant to this concern there is evidence that the price elasticity of demand for tourists from New Zealand is greater than for other inbound markets (Crouch, Schultz, & Valerio, 1992; Kulendran & Divisekera, 2007; Kulendran & Dwyer, 2009). If so then Australia may see a greater erosion of visitors from this market (or greater negative impact on its growth rate) compared to others. The same as for the other assumptions, the framework lends itself to a sensitivity analysis whereby different elasticity measures can be applied for the New Zealand (or any other) inbound and outbound markets to estimate the expenditure and tax effects of the PMC change.

A second industry concern deserving of further analysis is that the increased PMC will particularly hurt those destination regions that are most dependent on inbound tourism. It is the international component of Australia’s tourism industry that suffers most,

<table>
<thead>
<tr>
<th>National macro variable</th>
<th>Inbound expenditure effect</th>
<th>Tax revenue effect: inbound</th>
<th>Outbound expenditure effect</th>
<th>Tax revenue effect: outbound</th>
<th>Domestic tourism substitution effect</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change in real GDP, $m</td>
<td>1.50</td>
<td>0.83</td>
<td>1.12</td>
<td>1.29</td>
<td>1.72</td>
<td>0.86</td>
</tr>
<tr>
<td>Change in real GNI, $m</td>
<td>1.50</td>
<td>49.92</td>
<td>1.12</td>
<td>1.29</td>
<td>1.72</td>
<td>0.86</td>
</tr>
<tr>
<td>Change in economic welfare, $m</td>
<td>1.50</td>
<td>49.92</td>
<td>1.12</td>
<td>1.29</td>
<td>1.72</td>
<td>0.86</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tourism variable macro</th>
<th>Change in real tourism output, $m</th>
<th>1.50</th>
<th>0.10</th>
<th>3.46</th>
<th>4.74</th>
<th>22.75</th>
<th>11.38</th>
<th>19.93</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change in real tourism GDP, $m</td>
<td>1.50</td>
<td>-4.05</td>
<td>-2.49</td>
<td>11.96</td>
<td>5.98</td>
<td>4.50</td>
<td>10.48</td>
<td></td>
</tr>
<tr>
<td>Change in tourism employment, person</td>
<td>1.50</td>
<td>-34</td>
<td>-37</td>
<td>178</td>
<td>89</td>
<td>-66</td>
<td>-155</td>
<td></td>
</tr>
</tbody>
</table>

Source: authors’ estimates.
including tourism firms most associated with outbound tourism. Within this group of firms, those in remote areas most heavily dependent on inbound tourism will be the major losers. On the other hand, firms that cater primarily to domestic tourists can be gainers from the tax. This raises the possibility that specific compensation or strategic management measures can be developed to support selected sectors of the tourism industry over and above the 10 per cent share of the latest revenue increase ($61 million) which has been earmarked for tourism promotion. Unfortunately, the increase in the PMC has been undertaken without any study of its implications for different tourism markets by origin or tourism firms by location. While the national CGE model employed in this study cannot throw any light on such issues, regional CGE models (Pham, Simmons, & Spurr, 2010) can play a useful role in informing stakeholders of the gains and losses experienced by different tourism sectors in regional destinations.

A further question arises regarding the use of the $61 million funding allocated to Tourism Australia from the increase in PMC over the next four years. As far as is known, no study has been done on the most efficient/effective ways of spending the surplus of revenue over costs, however there has been research which shows that additional promotional expenditure is effective in increasing GDP (see Dwyer et al., 2013). Tourism Australia has stated that it will allocate the additional funds to target high yielding consumer segments in growing, key Asian markets, including existing markets and those with long-term potential. This strategy has the potential to overcome the losses that the tourism industry experiences from the PMC.

### 6. Conclusions

This study has estimated the impacts of an increase in the PMC, Australia’s departure tax. Impacts were estimated for both the economy and the tourism industry specifically.

While there are several effects which work in conflicting directions, by far the largest effect is the inbound tax effect. In retrospect, this is not surprising since a country gains from getting its visitors to pay its taxes. It should be noted that while an individual country will gain, the imposition of a tax by a country may, and probably will, be negative for global welfare. Additionally, 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.

On balance, a tourism industry can gain or lose from a passenger tax increase, depending on the price elasticity of the demands for inbound and outbound travel, the balance of inbound and outbound travel, and on the extent to which domestic tourism is a substitute for outbound tourism. On the assumptions that underpinned this study, the tourism industry in Australia is a net loser from the increased PMC. As most of the total economic positive effects accrue to the non-tourism industries, this suggests that the PMC works, in effect, as a transfer payment from tourism to non-tourism industries. This effect is magnified as there is only a small tourism-specific use of the extra Government revenue benefit derived from the increased taxation earned from non-residents.

The assessments are reliant on a number of key parameters. In particular, tourism demand elasticity estimates differ widely in the available literature, including for Australia, and there is no accepted value available for this assessment. 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 for the tourism industry of an increase in the PMC will be larger. The framework proposed enables the sensitivity of the simulations to elasticity values to be gauged as well as the effects of different degrees of substitution from outbound to domestic tourism.

The study throws light on the validity of the concerns of tourism stakeholders on the effects of the increased departure tax. Most importantly, it shows that calls for the complete abolition of the PMC (BARA, 2012) reveal a failure to understand that the tax benefits the Australian economy. While the tourism industry may indeed lose from the increased PMC, the economy as a whole may gain.

### References


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