MODELLING TOURISM IMPACTS ON SMALL ISLAND ECONOMIES: EVIDENCE FROM CYPRUS, MALTA AND MAURITIUS

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ABSTRACT

Tourism has become one of the leading economic activities in many small island developing states. Hence, changes in tourism demand can have considerable economic impacts, both at the macroeconomic level and on different sectors within the economy. Measurement of the magnitudes of the impacts has traditionally been undertaken using input-output modelling, which is constrained by such assumptions as fixed prices and fixed coefficients. Input-output modelling may over-estimate the impacts, as it does not take account of crowding out effects. This paper will use the more widely encompassing approach of Computable General Equilibrium (CGE) modelling to quantify the impacts of tourism on the island economies of Cyprus, Malta and Mauritius. The CGE models will quantify the impacts of changes in tourism demand on macroeconomic variables such as the government budget, GDP, employment and tourism demand. The effects of tourism tax policies are also considered.

Keywords: Tourism, economic impacts, CGE modelling.

INTRODUCTION

Tourism has become a key source of income and employment in many small island economies. For this reason, fluctuations in tourism demand can have major impacts throughout the economy, both at the macroeconomic level of gross domestic product, the government budget and the balance of payments and at the microeconomic level of different economic sectors and the firms that operate within them. Yet there is little quantitative evidence about the nature of such impacts, including their scale and diffusion across the economy. Moreover, there is virtually no comparative evidence examining the impacts across different islands. Thus, for example, it is not known whether the impacts of fluctuations in tourism demand mainly affect the agricultural sector or whether there are significant effects on secondary sector activities, or whether the relative importance of the effects across the different economic sectors differs between different island destinations.

This paper will contribute towards filling the gap in knowledge by examining the impacts of tourism on different economic sectors in three island economies: Cyprus, Malta and Mauritius. The analysis will be undertaken using computable general equilibrium (CGE) models that the authors have developed for each of the economies. The models have the advantage of being multi-sectoral, thereby accounting for all of the main economic activities within each of the island economies. The models are very flexible in that they are set within an open economy framework, allow for flexibility in prices and exchange rates and take account of the interrelationships between all of the sectors in the economy. They are particularly useful in facilitating analysis of policy-related issues, such as changes in tourism-related taxes.

The following section of the paper explains the modelling framework, including the advantages of CGE models relative to the input-output (IO) models that have traditionally been used to quantify economic impacts. The third section provides the results of a 10% expansion in the tourism sector, while the results of the tax simulations are given in the fourth section. The final section offers some concluding comments.

MODELLING THE ECONOMIC IMPACT OF TOURISM

The economic impact of tourism in the three islands is quantified using a computable general equilibrium (CGE) model of each of the economies. CGE models are widely used by such organisations as the World Trade Organisation (WTO), World Bank and Organisation for Economic Cooperation and Development (OECD) to measure the impact of shocks or policy measures, such as the WTO Uruguay Round negotiations (François et al., 1996) and economic development policies (De Melo, 1988). More general reviews of the models and their application have been provided by François and Reinert (1997), Ginsburgh and Keyzer (1997), Greenaway et al. (1994), Shoven and Whalley (1992) and Deverajan et al. (1982).
CGE models are now being used in tourism modelling, as exemplified by Adams and Parmenter (1991, 1994, 1995), Zhou et al. (1997), Alavalapati and Adamowicz (2000), Janaki and Wiktor (2000), Dwyer et al. (2000, 2001, 2003), Blake (2000; Blake et al. 2001, 2003), Blake and Sinclair (2003), Sugiyarto et al. (2003), Gooroochurn and Blake (2004), Gooroochurn and Milner (2004). According to Dwyer et al. (2003), it is the 'state of the art' tool for measuring the effects of tourism in an economy:

> "The study of the economic contribution of tourism has recently undergone a 'paradigm shift' as a result of the use of Computable General Equilibrium (CGE) models in place of input-output models … The development and

> application of this superior technique have major implications for the way that tourism economists think about the economic impacts of tourism and for the policy advice they give to decision makers in both the public and private sectors" Dwyer et al. (2003:117).

The origins of CGE models lie in input-output (IO) methodology, which has been the basis of much tourism impact modelling (for example, Archer, 1973; Fletcher and Archer, 1991; Pye and Lin, 1983). IO models rely on a number of assumptions, such as fixed prices and fixed coefficients for production, which make them a 'special case' within the more general approach which CGE models provide. In particular, when taking account of the interrelationships between different sectors within the economy, CGE models allow prices to vary and resources to be reallocated between production sectors. These conditions can be extended beyond the prices of the goods that are involved in the production process to labour markets, such that wages may be flexible (or fixed) and workers in different sectors of the economy may have different degrees of mobility between sectors.

CGE models are, therefore, formulated in a way that differs from input-output modelling, macroeconomic modelling, partial equilibrium modelling or any other forms of numerical simulation. Whereas the other modelling techniques rely on an initial stimulus which is then traced through the economic system in a deterministic manner, CGE models are formulated by specifying how economic agents react to changes in the economy. A CGE model is then solved simultaneously for all markets, production sectors and economic agents. This gives CGE models a significant advantage in flexibility over other forms of modelling, because other forms of modelling can only trace the effects of specific initial stimuli, and do so in a one-way deterministic system. In a CGE model, the initial stimulus can originate anywhere in the economy, and can be anything that can occur in an economic framework, ranging from changes in taxes and subsidies, to technological change, population growth, shifts in demand and regulatory changes. CGE models are not deterministic in the same way that other simulation approaches are. The initial stimulus affects markets, production sectors and economic agents who react to the stimulus and provide further changes to the economy. These changes do not work in a one-way direction, so effects can feed back to where the stimulus started.

The construction of the CGE models involves setting up a series of markets (for goods, services and factors of production), production sectors and demand groups (households) for each of the island economies. Each market, sector and household has a set of responses that determine how it reacts to external changes. Typically, markets for goods and services are market clearing. If the price of the good that a production sector produces increases in the context of excess demand, the output of the sector will increase. Consequently, its use of factors of production increases and the supply of the good increases. These demand and supply changes increase the price of factors of production and decrease the price of the output good, until it is no longer profitable to increase output further. By setting up the economic conditions whereby each market, sector and household reacts to changes in each of the economies, the CGE model can be used to examine a variety of scenarios.

The models for the island economies were developed to take account of the relationships governing sectors of economic activity, institutions and markets that are specific to each of the economies and were developed according to a common methodology, which is now explained. Each of the models describes how sectors respond to changes in output and input prices, and. involves functional forms describing the relationships that take place at the level of industries that are disaggregated to the sectoral level. The structure of the interactions is illustrated in Figure 1. In order to produce output, each industry i uses inputs of factor services and intermediate goods. Factor services are divided into labour and capital services,

and intermediate demands for each commodity are divided into demand for domestically produced goods and demand for imports. Each of these demands is taxed according to commodity taxation rates. Industry output is subject to a production tax or subsidy, and may constitute the output of more than one commodity.

[-- Insert Figure 1 here --]

The manner in which industries respond to prices is taken into account by functions that specify the elasticity of substitution between inputs, and output functions that specify the elasticity of transformation between outputs. For example, the elasticity of substitution between labour and capital specifies the extent to which industries' demands for labour and capital will change following a change in the rate of return to either factor. The elasticity of substitution between factors is governed by a parameter, ESUBFi, that is taken from the Global Trade Analysis Project (GTAP) database. These elasticity values, which are often used in CGE models, are based on econometric studies. The elasticity of substitution between goods and value added, ESUBi, is set to zero in the short-run version of the model. This is a common procedure in CGE models and is due to the fact that it is difficult, over the short-run, to introduce technological change that uses different intermediate inputs. The values of the elasticity of substitution between imported and domestic goods, ESUBMj are also taken from the GTAP database. The same elasticity ESUBMj is used for each input good in different industries, but different goods have different elasticity values.

The behaviour of the household is specified using functional forms that are similar to those used in the industry specifications. The household purchases goods and services in order to maximise its utility, which is specified as a function of input commodities in a similar way to the formulation of industry production functions. Purchases of private consumption and investment are products of purchases of commodities. Aggregate investment is a function of investment purchases of each commodity and an elasticity of substitution ELASI determines how investors respond to rises in the prices of capital goods. The demand for each commodity is separated into demand for domestic and imported goods, in a similar manner to the intermediate purchases of industries.

Aggregate consumption is a function of consumption purchases of each commodity. This function is governed by a linear expenditure system (LES) that is a more general form of function that is often used for private consumption expenditures. The use of the LES function means that income elasticities of demand are input into the model, and private consumption responds when household income rises. Consumption of each commodity is separated into demands for imported and domestically produced goods in the same manner as intermediate and investment purchases. Commodity taxation is also applied in the same manner, although commodity taxes paid by the household tend to be much larger than paid by other users, as the majority of VAT payments are attributed to them. The elasticity values used for the household are either sourced from the same database as the industry elasticities or set to commonly used values (ELASI=0, ESUBH=1).

The government receives income from all forms of tax payments and from abroad. It spends its income on public consumption goods and transfers any remaining income to the household. Income from taxes is received from both direct and indirect taxation, such as income tax on labour earnings, corporation tax on eligible capital earnings, (net) indirect taxes less subsidies on production, import tariffs and taxes on consumption (VAT and excise duties). Transactions between all agents in the economy and the rest of the world are taken into account by exports and imports.

In the case of the CGE model for Cyprus, thirty-three sectors undertake all production activities of goods and services. Three institutions (households, government and the rest of the world) consume these goods and services, in addition to the intermediate products consumed by sectors. Thirty-five markets are considered, of which thirty-three markets

correspond to sectors. In addition, there are factor markets for labour and capital services. Each of the sectors, institutions and markets involve significant detail. Commodity markets, for example, involve imports of goods from the European Union (EU) and elsewhere (other European, Arab countries and the rest of the world), exports of goods to the EU, other European countries, Arab countries and the rest of the world, as well as commodity taxation (VAT and import duties). Tourism production is undertaken by restaurants and hotels, passenger transport services and a proportion of auxiliary transport services. Tourism demand is separated into demand from the fifteen EU countries, other accession countries and the rest of the world, and each of these three categories is further sub-divided into demand from package holiday tourism, from tourists using packages on scheduled airline flights and from tourists who travel independently.

CGE models of small island economies follow the small country assumption, where the economy is assumed to be a price taker in the world market so that the world price of imports and exports are fixed in world price. Changes in demand and supply of the domestic economy do not affect world price. However, since tourism products are differentiated across countries, it is treated as a special export sector where the world price is not fixed.

The CGE model for the economy of Malta involves twenty-nine sectors, three institutions (households, government and the rest of the world), thirty-three markets, of which twenty-nine correspond to sectors, and factor markets for labour and capital. Tourism production is undertaken by five sectors: accommodation, restaurants, car hire, Air Malta and airports. Tourism demand is separated into eight different tourism markets: the UK, Germany, France, Italy, Sweden, Austria, the Netherlands and the rest of the world.

In the case of Mauritius, the CGE model includes seventeen sectors, three institutions (households, which are further sub-divided into eight categories; government and the rest of the world), seventeen markets, of which seventeen correspond to sectors, and factor markets for capital and labour, which is sub-divided into skilled, semi-skilled and unskilled categories. Five sectors are related to tourism production: hotels and restaurants, transport and communications, retail and wholesale trade, other manufacturing and other services. Tourism demand is separated into foreign and domestic demand.

The models for Cyprus, Malta and for Mauritius are solved for two variants relating to the time over which the economy can adjust to simulated changes. The short-run assumptions apply to the economic adjustment that will take place over 1-2 years. The long-run assumptions are applicable to adjustment over 3-5 years or longer. This is the approximate time scale under which all economic adjustments are made following an external change. The long-run model generally involves higher elasticities than the short-run model, because production technologies can be replaced over a long period of time. In the model for Malta and Cyprus, full time employment and unemployment is modelled, whereas the Mauritian model follows the assumption of full employment, which approximates the real context of the economy.

RESULTS OF AN INCREASE IN TOURISM DEMAND

The CGE models for each of the island economies were used to investigate the effects of first, an increase in tourism demand and, second, a policy of changing the rate of value added tax (VAT) on accommodation. The effects were quantified at the macroeconomic level, in terms of the changes in GDP, gross value added, employment, the government budget and welfare, as well as for every sector in the economy. The macroeconomic effects of a 10% increase in total tourism demand are shown in Tables 1-3.

Comparison of the results in the tables across the islands shows that in the short run, the effect of the change in tourism demand on tourist expenditure, as a percentage of the original expenditure, is greater for Mauritius with 8.7% than for Cyprus with 8% and Malta with 5.9%. Over the long run, the increases are higher, with percentage changes of 9.9% for Mauritius, 9.3% for Cyprus and 9.1% for Malta. The reason for this is that in the short run, a proportion of the stimulus from the increase in tourism demand is crowded out by higher prices. Over the long run, there is less crowding out as labour and capital move between economic sectors to meet the additional demand resulting from the original stimulus.

The results in the tables show that the effects of the change in tourism demand on GDP, as a percentage of the original value of GDP, is greater for Malta (0.6%) than for Cyprus (0.16%) and Mauritius (0.1%). The long run effects on GDP are also greater for Malta. However, the long run effects are lower than the short run for Malta and Mauritius, but higher for Cyprus. Thus, unlike Cyprus, Malta and Mauritius are subject to some crowding out effects through labour constraints over the long run. This may be related to the fact that in recent years, Cyprus has been able to meet some of the additional demand for labour by employing workers from Eastern European countries. The effects of the change in tourism demand on government revenues are positive in all cases.

The rise in tourism demand also has positive effects on welfare. These effects are proxied by a measure termed equivalent variation, which is a monetary measure of how much better off consumers are in terms of the change in their real income, using the original prices as the base. In the short-run, the change in welfare is slightly higher in Cyprus, at 0.87%, compared with a value of 0.8% in Malta and 0.2% in Mauritius. The long-run changes in welfare are lower over the long-run, at 0.6% for both islands. The reason why the increase in equivalent variation for Mauritius is lower than for Malta and Cyprus is that in the Mauritian model, households are divided into eight groups. Following the tourism expansion some households gain while others lose, and hence the equivalent variation (the sum of the equivalent variations of each household group) tends to be lower. Given this decomposition, the income distribution effect of the tourism expansion can be estimated using the Gini coefficient. The expansion of the tourism sector leads to a deterioration of the Gini coefficient showing an improvement in the income distribution. This is caused mainly by the fact that a relatively high percentage of lower income households are employed in the tourism sector.

Tourism also increases employment, as shown by the final rows in the tables. The net change in employment in the short-run, provided as the net change in jobs in full time equivalent (FTE) terms, is also marginally higher in Cyprus, at 0.26% of the original number of FTE jobs, compared with 0.2% in Malta. Over the long-run, the net change in FTE jobs is 0.3% in both cases. The number of FTE jobs lost as a percentage of the original number of FTE jobs is slightly higher in Cyprus than in Malta, with respective changes of 0.7% for Cyprus and 0.5% for Malta in the short-run and 0.66% for Cyprus and 0.6% for Malta in the long-run. Since full employment is assumed for Mauritius, such employment effects cannot be evaluated.

[-- Insert Tables 1-3 here --]

RESULTS OF A CHANGE IN VALUE ADDED TAX

Value added tax (VAT), or an alternative sales tax, is commonly levied on tourist accommodation (Gooroochurn and Sinclair, forthcoming; Gooroochurn, 2004). Malta and Cyprus, for example, levy VAT on accommodation at the rate of 5%, which is lower than the rate levied in other sectors of the economy. The government of each of the island economies

can consider a policy of changing the rate of taxation. Thus, VAT could be increased or, alternatively, a policy of decreasing or even removing VAT on tourism-related activities might be considered. Hence, the CGE models were used to examine the effects of increasing the rate of VAT to 15% on tourism related sectors in the three islands. The results of these changes are shown in Tables 4-6.

As Tables 4-6 show, the short-run and long-run macroeconomic effects of increasing VAT are mixed. Increasing VAT would have the effect of reducing tourism expenditures, the largest percentage decreases of -3.2% in the short-run and -9.6% in the long-run occurring in Mauritius, compared with falls of -0.5% and -1.2% in Cyprus and -0.9% and -1.6% in Malta. The relatively large effects in Mauritius are due to the fact that accommodation is particularly expensive in Mauritius and accounts for of a large proportion of tourists' budget. Consequently, an increase in tax on restaurants and hotels would cause a large reduction in tourism demand.

The decreases in GDP are also greatest in Mauritius, at -0.04% in the short-run and -0.09% in the long-run. The falls in GDP in Cyprus are -0.01% in the short-run and -0.2% in the long-run, and approximate zero over both periods in Malta. In contrast, welfare (measured by the equivalent variation) increases by 0.2% over both periods in Cyprus, by 0.1% in Malta and, in Mauritius, by 0.2% over the short-run and 0.4% over the long-run. The reasons why the tax increase is beneficial in terms of welfare while leading to falls in GDP and employment are that the economy is made better off as tourists are charged more per trip but this is not indicated in output measures such as GDP, which fall as a result of resources being transferred away from where they were used more efficiently in tourism-related sectors, into other sectors. Moreover, the burden of the increase in VAT falls mostly on tourists since large proportions of total demand for the restaurants and accommodation sector consists of tourism demand.

Government revenue experiences large increases in Cyprus, considerable increases in Mauritius but only a very small change in Malta. There are decreases in the numbers of jobs, given in terms of full-time equivalents (FTE), of -0.3% in Cyprus in the short-run and -0.4% in the long-run, and -0.1% in Malta over both periods. Overall, the increase in VAT would lead to an increase in the terms-of-trade, as foreign tourists pay more for their consumption. It would also decrease the real wage of labour and real return to capital which, in the long-run, would lead to lower employment and a decrease in GDP.

In the case of Mauritius, income distribution would improve following the increase in VAT. In terms of factor incomes, the poorer household groups suffer more owing to the contraction of the restaurants and hotels sector, which is low-skilled and labour intensive. The model assumed that a higher proportion of transfer income is directed to poorer than to richer households, and with higher government revenue, poorer households will benefit more. In terms of consumption, the increase in VAT would affect the higher income group more since the domestic component of demand of this sector is mainly from the higher income brackets. The overall effect is that poorer households gain more than richer households, resulting in an improvement in income distribution.

[-- Insert Tables 4-6 here --]

CONCLUSIONS

The main objective of this paper was to investigate the scale and diffusion of the impact of changes in tourism demand and tourism-related policy changes on the economies of Cyprus, Malta and Mauritius. However, it also useful to note that the context of the island economies differs in that Cyprus and Malta are highly dependent on the UK market for tourism, whereas Mauritius experiences demand from a wider spread of nationalities. Malta has been affected by some decreases in demand from the UK, whereas demand from the German market, in particular, has been growing. Mauritius is in the favourable position of benefiting from the growth of demand, notably from France, Reunion, Germany and Italy. Further research on the effects of changes in the composition of demand by nationality, as well as by such other characteristics as age, socio-economic group and purpose of visit, would be of interest.

Computable general equilibrium models were developed to quantify the effects of a change in tourism demand and also in the rate of value added tax levied on accommodation and restaurants in each of the islands. Considering, first, the effects of an increase in tourism demand, it is clear that the effects at the macroeconomic level are positive. There are increases in GDP, particularly in Malta. Welfare also rises, the increases being greater in Malta and Cyprus than in Mauritius. The positive effects on employment are marginally greater in Cyprus than in Malta but were not calculated for Mauritius, which has been experiencing near full employment and meeting an excess demand for labour by a policy of allowing for immigration. Further modelling to incorporate labour market effects into the CGE model for Mauritius is a possibility for future research.

The effects of the expansion of tourism demand at the level of different sectors of the economies are interesting. As anticipated, the models showed that the largest impacts occurred in the accommodation sector, and that there are significant positive effects on other sectors that are directly affected by tourist expenditure, notably restaurants, food and beverages, transport and communications. It is also interesting to note the positive effects on primary activities in the island economies, such as agriculture, fishing and forestry, as well as on gas and water provision. The service sectors that are particularly positively affected are construction and the wholesale and retail sectors. Other sectors of the economy are either little affected or experience some downturns, some secondary sector activities being examples of the latter.

CGE models are well suited to examining the effects of policy changes. The case of an increase in the rate of value added tax was considered in the paper. The macroeconomic impacts of the change in the tax rate were to decrease tourist expenditure, particularly in the case of Malta. There are also adverse effects on GDP and employment, although welfare rises. At the sectoral level, tourism-related sectors and primary sectors experience reductions in output. All of the islands experience a similar pattern of effects, although there are obviously differences in the magnitudes of the effects between the different economies.

One of the most interesting of the above findings is, perhaps, the positive impact that increasing tourism demand has on the agricultural and fishing sectors, particularly over the long-run in the case of agriculture. In contrast to a development pattern involving expansion of the secondary sector at the expense of agricultural and fishing activities, the growth of tourism appears to be complementary to the primary sector. This is important, as it allows rural inhabitants not only to remain in their areas of origin rather than migrating to the towns, but also provides possibilities for them to become more prosperous. At the same time, however, the results indicate that it would be useful for policy makers to consider the ways in which the growth of tourism might contribute more positively to secondary sector activities.

In the case of the increase in taxation, the results show that there is a trade-off between the different outcomes. On the one hand, increasing VAT is tempting for the government as it

provides a useful source of revenue. However, it may move resources away from sectors where they were originally efficiently utilised, towards sectors where there is greater inefficiency. Although GDP and employment fall, there are rises in welfare. In the case of Mauritius, modelling was undertaken to examine the distributional effects of the increase in VAT. These were shown to be positive, as it is tourists from overseas, rather than local residents, who would shoulder most of the burden of the increase in VAT. Thus, policy makers must choose their desired trade-off of outcomes when deciding whether or not to implement this type of policy.

The type of modelling that has been undertaken in this paper could be applied to other island economies to examine the effects of changes in tourism (or other) demand at both the macroeconomic and the sectoral level. Important directions for further research include further disaggregation of different types of households in the economy, providing greater knowledge about the distributional effects of changes in economic shocks or policies. The models can also be used to examine a much wider range of policy changes. The provision of results about the magnitudes and diffusion of the effects of policy changes are also useful in that they can be used to facilitate proper debate about the case for and against implementing different types of policies. Thus, the modelling facilitates decision-making on the basis of informed debate rather than implicit judgements.

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Figure 1: Intersectoral Interactions

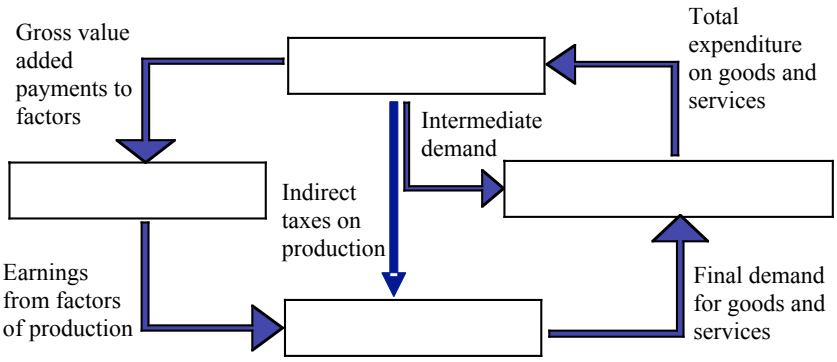

Table 1: The Macroeconomic Effects of a 10% Increase in Tourism Demand in Cyprus

Ä% ÄÄ% ÄÄ% ÄÄÄ% ÄÄ

	Short-Run	Long-Run
Tourism Expenditures ($m)	47.8 8	55.8 9.3
GDP ($m)	4.3 0.2	8.7 0.3
Equivalent Variation ($m)	21.7 0.9	14.7 0.6
Government Revenues ($m)	5.6	4.8
FTE Jobs	813 0.3	850 0.3
FTE Jobs lost	2219 0.7	2073 0.7

Change
Percentage Change

Table 2: The Macroeconomic Effects of a 10% Increase in Tourism Demand in Malta

Ä% ÄÄ% ÄÄ% ÄÄÄ% ÄÄ

	Short-Run	Long-Run
Tourism Expenditures ($m)	6.1 5.9	9.4 9.1
GDP ($m)	3 0.6	2.4 0.5
Equivalent Variation ($m)	3 0.8	2.3 0.6
Government Revenues ($m)	1.3	1.8
FTE Jobs	330 0.2	442 0.3
FTE Jobs lost	725 0.5	765 0.6

Change
Percentage Change

Table 3: The Macroeconomic Effects of a 10% Increase in Tourism Demand in Mauritius

Ä% ÄÄ% ÄÄ% ÄÄÄ% Ä	Short-Run	Long-Run
Tourism Expenditures ($m)	58.3	59.6
	8.7	9.9
GDP ($m)	2.7	1.4
	0.1	0.05
Equivalent Variation ($m)	4.5	5.4
	0.2	0.24
Government Revenues ($m)	8.5	8.4
Gini Coefficient	-0.04	-0.07
	-0.08	-0.1

Change
Percentage Change

Table 4: The Macroeconomic Effects of 15% VAT on Accommodation and Restaurants in Cyprus

Ä% ÄÄ% ÄÄ% ÄÄÄ% ÄÄ	Short-Run	Long-Run
Tourism Expenditures ($m)	-2.7	-7.4
	-0.5	-1.2
GDP ($m)	-0.2	-5.1
	-0.01	-0.2
Equivalent Variation ($m)	3.9	5.4
	0.2	0.2
Government Revenues ($m)	14.5	14.2
FTE Jobs	-1021	-1195
	-0.3	-0.4
FTE Jobs lost	2422	2311
	0.8	0.7

Change
Percentage Change

Table 5: The Macroeconomic Effects of 15% VAT on Food, Drink and Accommodation in Malta

Ä% ÄÄ% ÄÄ% ÄÄÄ% ÄÄ	Short-Run	Long-Run
Tourism Expenditures ($m)	-0.9	-1.6
	-0.9	-1.6
GDP ($m)	-0.2	-0.2
	-0.04	-0.04
Equivalent Variation ($m)	0.2	0.5
	0.1	0.1
Government Revenues ($m)	0.03	0.06
FTE Jobs	-105	-111
	-0.1	-0.1
FTE Jobs lost	306	327
	0.2	0.2

Change

Percentage Change

Table 6: The Macroeconomic Effects of 15% VAT on Restaurants and Hotels in Mauritius

Ä% ÄÄ% ÄÄ% ÄÄÄ	Short-Run	Long-Run
Tourism Expenditures ($m)	-19.3	-57.8
	-3.2	-9.6
GDP ($m)	-1.21	-2.7
	-0.04	-0.09
Equivalent Variation ($m)	4.9	9.0
	0.21	0.4
Government Revenues ($m)	6.5	13.7
Gini Coefficient	-0.07	-0.20
	-0.1	-0.4

Change

Percentage Change