2007

Evaluating short-term tourism economic effects in confined economies: conceptual and empirical considerations

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Original Citation

Croes, R., & Severt, D. (2007). Evaluating short-term tourism economic effects in confined economies: conceptual and empirical considerations. Tourism Economics, 13(2), 289- 307.

Tourism Economics, 2007, 13 (2), 289–307

Research report: Evaluating short-term tourism economic effects in confined economies – conceptual and empirical considerations

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Given the necessary involvement of government with the tourism product, accountability for government's expenditures of tax dollars is of increasing importance. This paper discusses the literature for three types of analyses that governments can use to ascertain the effectiveness of their spending of tax dollars to promote a tourism destination. The shortcomings and benefits for each method are discussed. Conclusions based on the type of method chosen require that the user understand the specific context, time horizon and their need for the study. For the case study presented in this paper, the context of a confined area, the time horizon of short-term and the need of finding out the economic impact of tourism for Kissimmee/ St Cloud, the I–O/SAM method is deemed optimal. A case study of Kissimmee/St Cloud, along with the results of the economic impact, is presented. Results of the study show that taxpayers are receiving a substantial return on their tax investment for the tax dollars spent.

Keywords: economic impact; tourism multipliers; cost–benefit analysis; input–output SAM method; computable general equilibrium

Tourism has become an important economic activity for many countries and regions across the world. The relevance of tourism lies in the generation of income, jobs and foreign exchange to support developmental goals for some countries while facilitating the economic regeneration of regional areas within other countries. In these efforts, governments are subsidizing tourism programmes and events with tax dollars, in the hope of creating tangible benefits for the citizenry (Lundberg *et al*, 1995; Burgan and Mules, 2001; Vanhove, 2005).

A government's involvement is required to address market distortions pervasive in the tourism market as price alone cannot play its expected role of coordination optimally in order to clear markets. The presence of public goods

on the one hand and the condition of asymmetric information between providers and buyers on the other prevent the optimality function (Gray, 1982; Mules and Faulkner, 1996; Burgan and Mules, 2001; Mak, 2003).

These two special conditions of structural presence of market distortions (for example, all businesses share a little of the bundle of products that are purchased and no business is used optimally, with some benefiting from the advertising dollars spent by other businesses) and the composition of the resources configuring the tourism goods (for example, some goods you cannot price, such as the views around an island) require the government to intervene in the production and consumption process of the tourism good. The role that government intervention takes ranges from supervision, promotion, preservation and provision of public goods, to skimming off any rent to benefit the general economy. This intervention manifests itself with funding the promotion of the destination, research, training and infrastructure and, more recently, the support of events in order to assist the demand pull of a destination (Ryan, 1995; Crompton *et al*, 2001; Chhabra *et al*, 2003). In fact, many governments have established special bodies (corporations and/or Convention and Visitors Bureau (CVBs)) whose charter is to attract tourists with the potential to generate large economic impacts.

Justification for economic impact studies

The presence of governments in the production and consumption process of tourism goods entails that tax dollars should be accounted for to the citizenry. Conceptually, Crompton *et al* (2001) claim that residents, through their tax dollars to a political body (for instance, council and municipality), fund events, facilities or programmes to enhance the attractiveness of a destination to tourists. In turn, these tourists spend their money at the destination based on its attractiveness, generating income, jobs and taxes for the region. At this point, Crompton *et al* (2001) assert that the residents should be aware of the return on investment (ROI) of the tax dollars being invested in the tourism product. Each dollar invested in tourism, therefore, should be justified to the public.

In essence, the justification process entails the measurement of the economic contribution of tourism to a destination. Management decisions such as production processes, marketing and resource allocations, to name a few, hinge upon the efficient contribution of tourism as an economic activity. They often rely on the results of economic impact analysis to assess the economic consequences of major tourism events and programmes (Eadington and Redman, 1991; Mules and Faulkner, 1996; Wagner, 1997).

Types of economic impact studies

Several tools have been used in order to measure this economic contribution. These include cost–benefit analysis (CBA) (Hunn and Mangan, 1999; Burgan and Mules, 2001; Hefner *et al*, 2001), input–output models (I–O) (Archer, 1995; Archer and Fletcher, 1996; Crompton *et al*, 2001; Tyrell and Johnston,

2001; Brown *et al*, 2002; Chhabra *et al*, 2003) and, more recently, computable general equilibrium (CGE) models. All can be applied in assessing the tourism economic impact and thus used to get some form of ROI for the taxpayer and governments involved (Zhou *et al*, 1997; Blake and Sinclair, 2003a; Sugiyarto *et al*, 2003; Narayan, 2004, Dwyer *et al*, 2005). Due to a variety of methodological issues with each (Briassoulis, 1991; Wagner, 1997), the literature about which tool is better is, at best, ambiguous.

In this paper, we address the three various types of economic impact modelling scenarios and close by presenting a case study using the tool that we prescribe as most efficient, using the case of the regional government body as the user of the economic impact study. The study claims that managers should utilize tools to measure the economic contribution of tourism based on their direct needs. Three distinct factors are taken into consideration, including: (1) the policy configuration (for example, regional, national, international body); (2) context (for example, what will the application be used for?); and (3) the intertemporal needs of the user (for example, short or long time horizon). For example, at the county level in the USA, destination managers have little policy and enforcement authority and purview over inflation, exchange rates, interest rates, wage levels and economic incentives to influence the supply of rooms, meals, shopping, etc. These are either state or federal issues.

Nonetheless, government officials are accountable to their constituents for how well they manage the taxpayers' money and to provide perspective with regard to the ROI of this money. Their needs, therefore, are to justify to their constituents their resource allocation decisions, either through the budget process or through public relations communications in the short run. Managers at this level seem to understand the relevance of justifying their business or investment decisions to their constituencies by commissioning impact studies. In some instances, they even 'borrow' multipliers from other studies and apply them to a different case without having a study conducted (Tyrrell and Johnston, 2001).

This study is a conceptual and empirical analysis of the economic contribution of tourism at the local level (county) in the USA. It responds to this particular need of policy configuration and authority at the subregional level (county) in the USA. It departs from three main premises: (1) there are underused resources at the regional level; (2) the need at the regional policy level is income generation; and (3) the observation of the parsimony principle, which indicates that simpler models are preferred, *ceteris paribus*. Both the three aforementioned premises and the county government level of accountability make the I–O framework highly relevant to county managers and planners.

An IMPLAN (impact analysis for planning), an I–O/social accounting modelling system (SAM) originally developed by the US Department of Agriculture Forest Service, proved very useful in providing the needed information for managers and planners at regional level. The model was applied to Osceola County, an area in Central Florida, USA. The county represents the communities of Kissimmee, St Cloud, Celebration, Poinciana and Harmony. Osceola County is marketed worldwide as Kissimmee/St Cloud. It has over six million annual visitors whose impact on the county has helped make it one of the fastest growing counties in the nation.

This study utilizes a multiple-step process as follows. It:

(1) conducts a detailed review of the economic literature regarding types of model measurements utilized;
(2) assesses the usefulness of different impact tools;
(3) explains the use and applicability of IMPLAN as a measurement tool;
(4) applies IMPLAN to the Kissimmee/St Cloud area; and
(5) addresses the conclusions and implications specific to the type of economic modelling system to choose, as well as implications for the case study presented in the article.

Literature review

Literature on assessing tourism effects dates back well over 30 years (for example, Archer, 1973; Mathieson and Wall, 1982). This literature review focuses particularly on the analytical frameworks applied and the methodological issues associated with these frameworks. First, the literature review summarizes the two major reasons why governments come to be involved in the production of the tourism good and, hence, have become major users of cost–benefit and economic impact analyses, including the three frameworks discussed below. Secondly, three analytical frameworks have been applied to discern the economic consequences of tourism including: the cost–benefit analysis model (CBA), the input–output model (I–O) and the computable general equilibrium (CGE) model. The strengths or weaknesses of each model are considered and then the model chosen for this particular study is discussed.

As mentioned and elaborated on above, governments are involved in the supply of tourism products. The tourism literature identifies two main reasons for the inevitability of governmental intervention in the tourism product. The first is the suboptimality level of tourism production due to market distortions, and the second is the presence of non-priced goods in the production of the tourism good (Gray, 1982; Mules and Faulkner, 1996; Burgan and Mules, 2001; Mak, 2003).

Market distortions

Market distortions in the manufacturing of the tourism good occur because producers of tourism inputs are not always able to capture the full amount of benefits. For example, if a room producer (hotel) promotes the destination, it is possible that the tourist will buy a room from another hotelier. Presuming the tourist buys the initial hotelier's room, the tourist will engage in the consumption of other goods (meals, shopping, transportation and entertainment) at other businesses; thus, the initial hotelier will not reap all the benefits. Spillovers due to the presence of the tourist at the destination cannot therefore be completely captured by the provider who initiated the promotion. This situation engenders both a suboptimality issue as well as a free riders problem, with the end result that the private sector is unable to provide the goods in appropriate amounts (Gray, 1982; Mules and Faulkner, 1996; Burgan and Mules, 2001).

Non-priced goods

The suboptimality problem is compounded by the presence of non-priced goods in the composition of the tourism product. Non-priced goods are essentially public goods, the enjoyment of which does not carry a price tag. This is due to the nature of collective consumption and the inability to charge users an appropriate fee for the use of the good (Gray, 1982). Examples include enjoying the beach, sun, mountains and scenery. These could be overused to the point of jeopardizing the proper resource base on which the attractiveness and prestige of a destination is embedded (Gray, 1982; Mak, 2003). Since the government must be involved in order to promote the tourism product, accountability measures are employed by the government, usually in the form of outside parties, to measure the economic impact of the spending.

Cost–benefit analysis

Burgan and Mules (2001) assert that the CBA framework would typically apply to tourism as being a heterogeneous product. It is embedded in welfare economics and in ascertaining the consumer surplus of the residents. It ranks alternative uses of public funds from a macroeconomic perspective. Essentially, it assesses whether the benefits of a project outweigh the costs, and whether the consumer's willingness to pay outweighs the value (opportunity costs) of the resources consumed in the process. This estimation process allows for the identification of winners and losers in the funding allocation process.

There are some issues, however, with the application of the CBA framework to tourism. Typically, a CBA application entails the identification of cost reduction effects due to a focus on the consumer. Consumer surplus is the variable to justify the use of public funding to a project. In the case of tourism, however, investing means increasing demand for rooms, meals, transportation, etc, rather than specifically providing benefits to local consumers. Consumer surplus is an inadequate measure of gain or benefit in this context.

Production levels seem more appropriate, therefore, than consumer surplus as the unit of analysis (Burgan and Mules, 2001) as it is the providers who mainly capture the impacts of tourism. Assessing benefits through producer surplus implies the assumption of efficiency in the allocation of resources. The value attributed to resources is based on their opportunity costs and assumes that all resources are used efficiently. This assumption, however, does not always reflect reality. Unemployment and some degree of market failure, which is typical in the provision of the tourism good, dictate that the value of resources is most often higher than the value obtained in their current use (Sinclair and Stabler, 1997).

The presence of underutilized factors of production, a situation familiar to many tourist regions, also renders inadequate the use of producer surplus as a measure of tourism benefits. If neither consumer nor producer surplus are adequate measurements of economic tourism activity, then the applicability of CBA in the tourism context appears limited. Based on this claim, Burgan and Mules (2001) suggest that an economic impact approach appears to have greater applicability as a measure of a benefit arising from tourist activity.

Economic impact approaches

The literature identifies two economic impact approaches, namely the I–O/SAM system and the CGE model. To date, the I–O/SAM system has been the most widely used method for measuring the economic contribution of tourism. Essentially, the model traces the cumulative effects of an exogenous shock (for instance, increased tourism demand) in the economy, which is captured by the export column vector. These cumulative effects manifest themselves in direct, indirect and induced effects. In order to trace these effects, the model identifies the monetary transactions between an industry (for example, tourism) and other industries. It departs from the existing interindustry patterns and views businesses as a network of activities. In addition, it captures the broader socio-economic activities incorporating the activities of labour/capital markets ('factors') and those of households ('institutions').

The economic activities are presented in mathematical matrices called transaction tables. These tables are derived from the purchases of one industry to others in order to produce another unit of output of final demand. Since multiplying by a vector of final demand Y will produce output X, this matrix also represents the multiplier effect through the following equation (Miller and Blair, 1985):

$$X = (I - A)^{-1}Y \tag{1}$$

where $(I - A)$ is the Leontief inverse matrix.

The cumulative effects that ripple through the economy are generated by the indirect and induced effects caused by the initial shock of an economic activity. The former refers in I–O parlance to interactions between businesses, while the latter refers to the interaction between the activities of labour/capital markets ('factors') and those of households ('institutions': which include government and firm expenditures).

This model is premised on the concept of surplus capacity. This capacity is used whenever a shock occurs in the economy to produce more output and provides the basis for the use of the multiplier methodology to estimate the value of income and employment. The model is confined to economic interdependence based solely on quantities of inputs and outputs. It estimates the value of the multiplier based on the ratio between the value of income and employment generated and the initial change in tourist spending. The level of the multiplier depends on the strengths of the business linkages and the pace of economic growth. The stronger the linkages, the higher the value of the multiplier, and hence the lower the 'leakages' (Mathieson and Wall, 1982; Archer and Fletcher, 1996; Sinclair and Stabler, 1997; Mak, 2003; Vanhove, 2005).

The I–O/SAM system has some interesting advantages when applied to tourism. It focuses on production linkages yielding a well-suited system for examining how tourism demand and growth can ripple throughout the economy. Furthermore, it provides an excellent organizational framework for data collection and display, able to provide a transparent view of the structure of an economy and capable of readily accommodating tourism data.

The I–O/SAM systems have been applied to numerous countries: for example,

Antigua (Pollard, 1976), Bermuda (Archer, 1995), Hong Kong (Lin and Sung, 1983), Korea (Song and Ahn, 1983), Australia (Cooper and Pigram, 1984), Mauritius (Archer, 1985), Singapore (Khan *et al*, 1989; Heng and Low, 1990), Ireland (Baum, 1991; Henry and Deane, 1997), India (Pavaskar, 1987) and the Seychelles (Archer and Fletcher, 1996). The model has also been applied to regions within countries (West, 1993; Adams and Parmenter, 1995) and to specific events, including positive special events such as fairs and the Olympics and negative special events such as the bombing of the Olympics (Lee and Taylor, 2005).

Recently, the I–O/SAM system has been seriously challenged, despite its extensive use. These challenges pertain to its linearity, lack of behavioural content, lack of interdependence between prices and output, lack of explicit resource constraints, lack of stochastic elements in interindustry coefficients and lack of input and import substitution possibilities (Briassoulis, 1991; Zhou *et al*, 1997; Dwyer *et al*, 2004). The two most important biases of the model, according to these critics, are linearity and infinite elasticity of supply. The inflexibility of anything other than constant return to scale (as opposed to economies or diseconomies of scale) and infinite supply elasticities might lead to overestimating impacts and, hence, spurious interpretation of the multiplier values rendering unuseful impact data for the particular measurement source at hand. Due to these inconsistencies, there is need for other models. One such model gaining in popularity is the CGE model.

The CGE model

The application of the CGE model to tourism impact is rapidly increasing as a result of the alleged shortcomings of the I–O/SAM system. The model has been applied to several countries such as Australia (Adams and Parmenter, 1995; Dwyer *et al*, 2003), Hawaii (Zhou *et al*, 1997), Spain (Blake, 2000), the UK (Blake and Sinclair, 2003a) and the USA (Blake and Sinclair, 2003b). CGE is a multi-market simulation model based on the simultaneous rational behaviour of economic agents (households and firms) in response to price signals and subject to accounting balance and factor constraints.

The starting conceptual point is the circular flow of commodities in a closed economy. This is founded on the accounting framework of the social accounting system (SAM). The algebraic development of the SAM model can be found in Miller and Blair (1985). The CGE framework expands on the I–O/SAM framework by modelling both households and producers through a Cobb–Douglas (CD) economy, where consumption is set as a constant elasticity of substitution (CES) aggregation of both domestic and imported goods (Sugiyarto *et al*, 2003). The CD economy is expressed in the form $Q_t = AK_{t1}^{\beta}L_{t2}^{\beta}$, where L represents labour, K is capital, Q is output and A, β_1 and β_2 are parameters to be estimated.

The CGE model has proven particularly useful in addressing long-term repercussions of tourism as they affect both the structure and the spatial distribution of the economy (Dwyer *et al*, 2005). The role of tourism in the structural change of the economy and its prominence within that economy is of relevance to many countries as it may contribute to crowding-out effects on

other sectors of the economy (for example, agriculture) (Adams and Parmenter, 1995; Dwyer *et al*, 2003).

However, the CGE model does not replace the I–O/SAM system; rather, it builds upon the advantages while overcoming some of the disadvantages of the latter. For example, it retains the economic interdependencies, but incorporates input/import substitution, the principle of conservation of value, behavioural content resulting from price, tastes and preferences, workings of markets and supply constraints. The model assumes three basic conditions in the working of the economy, such as market clearance, zero profit and income balance. By setting up these economic conditions, several scenarios can be constructed and hence this process provides the model with an advantage in flexibility compared to the I–O/SAM system.

The CGE model, however, has its own shortcomings. The two most important are the assumption of rational economic agents and the assumption of constant economic equilibrium (Sandler, 2001). The optimizing behaviour of economic agents is predicated on a perfect timing between consumption and production, meaning that consumers' taste must enable trade-offs or substitutions among goods, while production must associate increases in inputs with increases in output with the same paucity. This would not be problematic when the time horizon is long and when the external shock is relatively small.

The tourism product presents features difficult to align with perfect equilibrium. Market distortions reduce the role of price signals and hence affect the efficient allocation of resources. Furthermore, the presence of public goods impacts the optimizing behaviour of economic agents. Finally, extreme cases of natural hazards, such as in the case of hurricanes in Florida, can propel great external shocks to the markets to the extent that the applicability of the CGE model is rendered deficient (Rose and Liao, 2002).

These shortcomings are either ignored or sparingly commented by the proponents of this procedure in the tourism literature. Dwyer *et al* (2005), for example, seem to spend more time finding the shortcomings of the I–O/SAM system than making a case for CGE. Their studies do not allow for the observer to trace any particular features of their database or input parameters, algebraic structure, or method of solution. Their results and exercise remain a form of 'black box' (Panagariya and Duttagupta, 2001).

The debate in the literature as to the best method to apply in terms of measuring tourism impact will continue unabated. Some researchers have attempted to tweak the I–O model to render more potency in its application (Wanhill, 1988; Fletcher and Archer, 1991). Several new microcomputer programs have tried to overcome the limitations of the model by incorporating some degree of flexibility in its assumptions. No matter how you look at the two models, the I–O model will remain with its inherent bias of being too rigid, while the CGE model will manifest its overflexibility as bias. The former is likely to overstate, while the latter more likely will understate the impacts.

The choice as to which model to apply, therefore, boils down to two things: the definition of the economy under review (regional, national and international) and the time horizon (whether short- or long-run context). If the need is to examine the tourism impact of a confined economic area such as a

county or municipality (subregion) within a short-run time context, then an I–O model would be a good method to use. Based on this claim, the study proceeds to apply IMPLAN, an I–O model, to the Kissimmee/St Cloud area in Central Florida as an example of the appropriate model to use for a confined economy over a short time horizon.

Methodology (IMPLAN modelling system)

IMPLAN is an I–O model that assumes a uniform national production technology and uses the regional purchase coefficient approach to regionalize the technical coefficient (Crompton *et al*, 2001; Upneja *et al*, 2001; Brown *et al*, 2002; Chhabra *et al*, 2003; Daniels, 2004). The model captures the multiplier effects of an exogenous shock in the economy, namely tourism spending. Each industry in an economy makes a certain amount of goods and services that are used by other industries, purchased by institutions (households, governments, etc), or exported outside the examined region. Additionally, each industry uses as inputs goods and services from other industries, as well as purchase inputs from households (labour) and imports outside the region. These transfers to and from the region are assembled mathematically to determine the multiplier effect, or the number of times that a dollar is spent in an economy.

The initial increase in demand due to tourism spending is re-spent in the economy a multitude of times until it dissipates. This re-spending is the multiplier effect and, more specifically, it is a ratio measure of the total effects throughout the economy of an exogenous shock in the economy. The direct effects refer to the changes in the industries (hospitality) to which a final demand change was made. Indirect effects are the changes in business transactions (interindustry purchases) as they respond to the new demand of the directly affected hospitality industry. Induced effects typically reflect changes in spending from households as income increases or decreases due to changes in production.

The modelling system of IMPLAN has five assumptions. First, if additional output is needed, then all inputs increase in the same proportion, with the outputs better known as constant return to scale. Second, an unlimited amount of supplies exist. Third, the input system is constant in that price changes do not cause an industry to purchase other similar or substitute goods. Fourth, if output for one product increases, the industry will proportionally increase the output of all products, better known as homogeneous sector output. Lastly, the same technology is utilized by the industry to produce goods (Minnesota IMPLAN Group, 1997).

National data serve as control totals for the state, which in turn serve as control totals for county data. The primary sources of employment and earnings data are County Business Patterns and Bureau of Economic Analysis (BEA) data. More specifically, it uses BEA 'Make' and 'Use' tables, which are being produced as part of its Regional Economic Information Service (REIS) and are updated every five years.

It estimates output at the state level by using value added reported by BEA as proxies to allocate US total gross output. It also allocates state total gross output to counties based on county employment earnings. It further uses BEA

Gross State Product series for states, and implicit assumption of uniform value added-to-earnings ratios across counties within a state. Its sector scheme consists of 528 sectors.

The sectors are based on the Standard Industry Classification Code System and the Bureau of Economic Analysis I–O sectoring. Through this, IMPLAN is able to model both Type I multipliers, which represent indirect effects, and Type SAM multipliers, which represent indirect and induced effects. The Type III multiplier depicts a non-linear consumption function and therefore does not consider the marginal propensity to consume as constant. It assumes that the population completely responds to employment changes and drives consumer spending.

Indirect effects represent industries response to total demand in that consumer demands are met directly or indirectly and thus each industry producing a product (output) in turn creates demand for other products (input). The other producers then buy goods and services as necessary inputs to produce their outputs. This cycle of indirect spending continues until leakages including imports, wages and profits stop the multiplier cycle. The Type SAM multiplier gives complete effects by measuring market and non-market flows. Market flows are from businesses and non-market flows include flows between houses and government, for example. The SAM multiplier adjusts for dollars that are not normally spent again in that region or it accounts for leakage, bringing the more conservative approach. This lowers, yet makes more realistic, the induced effects from tourism dollars.

Prior to computing the multipliers, the matrix (social accounting matrix) must be created. This uses trade flows, which is the movement of goods and services in a region and with the outside world. It creates regional purchase coefficients that use econometric equations to account for local production and exports from the area. The regional purchase coefficient represents the amount that is local and bought from locals in the area. Once this data is measured, both Type I and Type III or SAM multipliers can be determined. The Type I is the direct effects and the indirect effects divided by the direct effects. The Type III or SAM multiplier is the direct effects plus the indirect effects, plus the induced effects divided by the direct effects.

The study

For the purpose of this study, the following steps were part of the procedure in estimating the effects. First, the data was collected from a regular intercept survey sample undertaken by the Kissimmee/St Cloud Convention and Visitors Bureau (KSCVB).[1] The survey consisted of 45 questions and was intended to obtain the perspective of visitor behaviour and activities during their visit. The KSCVB administers this survey monthly and conducts it at area lodging facilities throughout the year. Approximately 433 interviews were conducted monthly, yielding more than 5,000 respondents.

The survey defined a visitor as anyone staying overnight in paid accommodation in Osceola County, regardless of distance travelled. Anyone staying overnight in non-paid accommodation is referred to as a visitor staying with friends and relatives (VFR). Day visitors are excluded from the sample of

respondents. The National Travel Survey of the Travel Industry Association of America (TIA) uses the same method, also reporting all trips involving one or more nights away from home, regardless of distance.[2]

The procedure used in the study consists of four interrelated steps. First, the survey requested information on a group's expenditures made in connection with visiting the local region and on the number of nights the group spent in Osceola County. The way in which the multiplier model is constructed allows it to be driven by visitor spending levels and patterns as they are recorded by surveys. This means that visitor spending is broken down into a variety of categories, such as food, petrol, attractions, lodging, etc.

Although visitors also spend money on many other items not listed in the expenditure survey, such as utilities, phone calls, laundry services, etc, the effects of this spending is picked up by the hotels or other establishments where they occur. Therefore, although the categories of expenditure included in the tables shown below may appear limited and visitors seem not to spend money directly on phone calls and other utilities, this expenditure is, in fact, included within the model's structure and its effects are included in the calculations.

Second, data conversion using the Consumer Price Index (CPI) was used to match IMPLAN data. The most currently available data from the majority of these databases is 2002, so the most recent IMPLAN data is for 2002. Calculations were made in 2002 US dollars and then inflated on a sector-specific basis to 2004 US dollars. Based on this procedure, the study calculated the expenditures on a 'per person' and 'per day' basis for a number of items.

Third, IMPLAN was applied to the Osceola region to track the sectors affected by tourism. It estimated direct, indirect and induced values. To achieve this, the model calculated the retail markup percentage and local purchases. The retail margins and local purchases constituted the direct impact of the expenditure. While visitor purchases would accrue to the local region as final demand, only the margins on goods obtained at retail stores should be counted as local final demand. The ratio of the latter to visitor spending is called the capture rate. For the purpose of this study, the capture rates of food, car rental, petrol, attractions, shopping and hotels were established based on the local retail margins or purchase coefficients.

Fourth, the study calculated the total impact of the expenditure, including indirect and induced effects, with regional multipliers. The study used three types of multipliers; that is, output (sales), value added (income) and employment. The sales measure reported the effect of an extra unit of visitor spending on economic activity within the examined region. Personal income measured the effects of visitor spending on the changes that result in the level of residents' personal incomes. It has been common to measure income multipliers in relation to tourist expenditures; for instance, an extra unit of visitor spending on the changes that result in the level of residents' personal incomes. In this study, the income multipliers are derived, however, from the relationship between direct, indirect and induced income. A Type I multiplier captured the indirect effects of purchase among industries, while the social accounting matrix (SAM) captured the additional effects of household expenditures induced by changes in labour income.

Table 1. Direct economic impact of tourism or visitor expenditures (2004).

Item	Expenditure (US$)	Percentage	Spending per day per visitor (US$)
Food	477,158,841.04	36.1	15.14
Car rental	9,139,766.44	0.2	0.29
Petrol	45,383,667.84	3.4	1.44
Attractions/activities	151,594,057.16	11.5	4.81
Shopping	171,134,247.00	13.0	5.43
Hotel	466,443,252.80	35.3	14.80
Total	*1,320,853,833*	*100*	*41.92*

Results and discussion

In 2004, 6,060,853 visitors spent over US$1.3 billion dollars in Kissimmee/ St Cloud. The average spending per visitor per day was estimated at US$41.92, with a total spending of US$674, based on a reported 3.01 individuals per travelling party staying an average of 5.2 days per trip. Table 1 shows a breakdown of over US$1.3 billion in visitor expenditures. Visitors spent the most on food (36.1%), which was followed by lodging (35.3%) and shopping (13%).

The economic impacts of tourism expenditures have been described with a number of variables, including the direct, indirect and induced dollar impact on employee and proprietor income, total sales and the potential number of jobs, including both full- and part-time, which might be created. Table 2 presents multipliers for the sectors that receive expenditures from visitors to the local region. Comparing across Type I and SAM multipliers, it should be noted that the induced effects are generally larger than the indirect effects, meaning the impact is greater in the field of salaries and benefits than in sales for other businesses. Except in the car rental and attractions categories, the induced effects are larger in the food, petrol, shopping and hotel sectors.

Table 3 indicates that visitor expenditures resulted in US$1.6 billion of total industry output, US$867 million of total income and 23,174 jobs in the local economy. Among the US$1.6 billion in total output, about US$1.3 billion was generated from direct effects, US$236 million from induced effects, and only US$165 million from indirect effects. Similarly, the direct effects on income were about US$607 million, while induced effects (US$155 million) turned out to be larger than indirect effects (US$105 million). Based on these figures, the multipliers for output, income and jobs are 1.46, 1.43 and 1.26, respectively.

Multiplier effects denote the linkage of a given economy on a local economy. The output multipliers suggest that the increased sales from the traditional hospitality industry such as food (eating), attractions and amusement activities, car rental and hotels, have high impact per unit of output on the local economy (Table 4). Conversely, shopping and petrol had less impact per unit of output on the local economy, suggesting high leakage contents. Food, the largest visitor expenditure item, brought the largest impact to the local economy, indicating

Table 2. Osceola County: economic impact multipliers.

Industry	Output		Value added		Labour income		No of jobs	
	Type I	SAM	Type I	SAM	Type I	SAM	Type I	SAM
Food	1.21	1.44	1.32	1.70	1.18	1.40	1.10	1.24
Car rental	1.20	1.33	1.43	1.73	1.43	1.70	1.52	1.89
Petrol	1.15	1.41	1.14	1.39	1.13	1.34	1.08	1.26
Attractions/ activities	1.20	1.37	1.30	1.57	1.27	1.51	1.19	1.37
Shopping	1.13	1.37	1.11	1.33	1.11	1.32	1.06	1.20
Hotel	1.07	1.26	1.06	1.24	1.07	1.28	1.06	1.26

Note: Type I is the indirect effect. SAM is the induced effect.

Table 3. Total economic impact of visitor expenditures in Osceola County (US$).

Impact	Output	Value added	Labour income	No of jobs
Direct	1,128,934,907	607,802,248	369,996,815	18,397.46
Indirect	165,058,125	104,827,647	52,993,247	1,791.06
Induced	235,708,792	154,586,835	80,047,708	2,986.20
Total	*1,592,701,828*	*867,216,750*	*503,037,757*	*23,174.72*

Table 4. Influence of visitor expenditures on sectors in Osceola County (US$).

Industry	Output	Value added	Labour income	No of jobs
Food	657,694,925	320,570,230	230,766,011	12,182.97
Car rental	11,374,658	4,163,551	2,370,381	73.61
Petrol	12,588,124	8,535,566	4,911,605	210.36
Attractions/ activities	201,890,957	95,273,430	53,555,163	2,443.25
Shopping	94,214,220	66,954,592	35,472,626	1,770.21
Hotel	551,938,935	371,719,359	175,961,971	6,494.32

a strong linkage to the local economy. Comparatively, hotels in general had a weaker linkage with the local economy.

Table 4 further indicates that the ratio of value added to sales is 0.54. This means that hospitality businesses receiving monies from visitors through their purchases paid out US$0.48 in wages and salaries to their employees for every dollar of sales, in addition to rents and profits. Total value added included the US$0.48 from income plus another US$0.06 in sales tax for a total of US$0.54. The remaining US$0.46 goes to purchase inputs by hospitality establishments from other sectors. About half of the sales in most hospitality businesses typically go directly to income. This is consistent with the special nature of

Table 5. Local sales and income impacts 2004 (US$).

Industries with greater than US$10 million change	Output	Value added
Fruit farming	20.371	12.107
Cattle ranching and farming	24.608	N/a
New residential 1-unit structure	219.244	71.937
New multifamily housing structure	59.086	24.417
New residential additions and alterations	78.827	22.182
Highway, street, bridge and tunnel	26.549	44.729
Water, sewer and pipeline construction	13.139	N/a
Other new construction	36.936	17.258
Maintenance and repair farm	14.892	N/a
Maintenance and repair of non-residential	26.308	12.332
Other animal food manufacturing	27.065	N/a
Wood windows and door manufacturing	19.402	N/a
Commercial painting	21.219	N/a
Plastic bottle manufacturing	10.170	N/a
Plastic plumbing fixtures and all	53.309	15.980
Ready-mix concrete manufacturing	23.803	N/a
Construction machinery manufacturing	18.690	N/a
Overhead cranes, hoist and mono	19.676	N/a
Broadcast and wireless communication	24.508	N/a
Wholesale trade	242.027	175.226
Truck transportation	17.672	N/a
Transit and ground transportation	12.625	N/a
Scenic and sightseeing transportation	15.929	N/a
Postal service	16.308	13.401
Motor vehicle and car dealers	89.020	67.085
Furniture and home furnishings	11.780	N/a
Electronics and appliance stores	10.751	N/a
Building material and garden supplies	30.034	23.508
Food and beverage stores	90.381	68.160
Health and personal care stores	33.198	24.285
Petrol stations	26.181	18.982
Clothing and clothing accessories	33.924	26.161
General merchandise stores	96.706	75.770
Miscellaneous store retailers	24.665	17.916
Telecommunications	28.054	18.816
Non-depository credit intermediaries	21.064	14.815
Insurance carriers	14.109	N/a
Insurance agencies, brokerages	13.964	11.152
Monetary authorities and depositories	58.254	37.436
Real estate	882.580	622.715
Legal services	12.748	N/a
Accounting and bookkeeping services	11.180	N/a
Architectural and engineering services	27.078	19.175
Management of companies	96.628	65.154
Office administrative services	22.894	N/a
Travel arrangement and reservation	58.349	22.534
Services to building and dwelling	42.323	25.586
Other educational services	11.476	N/a
Offices of physicians, dentists	129.450	105.325

Table 5 continued.

Industries with greater than US$10 million change	Output	Value added
Other ambulatory heath care services	18.510	N/a
Hospitals	145.538	69.940
Nursing and residential care facilities	57.549	36.661
Child day care services	16.296	N/a
Social assistance, except child day care	40.708	23.499
Other amusement, gambling	50.698	26.644
Hotels, motels, including casinos	267.428	227.713
Other accommodation	12.308	N/a
Food services and drinking places	353.827	164.080
Automotive repair	54.433	20.186
Commercial machinery repair	17.266	N/a
Household good repair and maintenance	10.225	N/a
Personal care services	16.834	N/a
Other personal services	11.934	N/a
Religious organizations	15.540	11.904
Grant-making and giving and social	24.630	10.277
State and government electricity	72.853	58.414
Other state and local government	131.189	88.613
State and local education	120.806	120.806
State and local non-education	207.070	207.070
Owner-occupied dwellings	318.858	255.470

tourism-related businesses, which traditionally are more labour intensive than the manufacturing sectors, with the latter using more goods and services relative to labour in the production process.

The significant share that salaries represent in visitor expenditures clearly has a consequence on the induced effects. Consider, for example, new job generation. A total of 14 new jobs are generated in the hotel sector as a result of US$1 million in visitor spending. Eleven of these jobs are primary or direct jobs in hotels. That means that there are three additional 'secondary' jobs generated in other sectors through the cumulative effects of the direct spending by visitors. Because the Type I effects refer to 0.06, this means that nearly 0.7 jobs are generated in establishments that sell inputs to hotels and 2.3 jobs (SAM effects of 0.20) by purchases at several establishments within the local economy (such as supermarkets, banks, dentistry, estate agents, etc) by workers employed in the hotels.

Visitor expenditure is distributed over a variety of productive sectors and each of these sectors has a different set of multiplier values associated with its output. For example, a dollar expenditure on each of the tourism-related sectors will, on average, generate between 0.19 and 0.80 of income, depending on which sector receives that expenditure. This information, for example, enables the government to have an insight in which sectors it wishes to encourage tourist spending. For example, if the government wishes to maximize income generation from tourist expenditures, it should encourage tourists to spend more on staying in hotels, eating out and having fun (amusement).

The distribution of the economic effects of visitor spending, however, goes beyond these traditional sectors. Table 5 provides a detailed summary of the

industries that would experience income changes of more than US$10 million at the county level. For example, in terms of sales, visitor spending in the local economy also generated purchases in 66 other sectors, such as agriculture, construction, manufacturing, transportation, real estate, educational services and health and social services. Visitor spending expands volume sales in real estate, construction, manufacturing and education services more than any other sector in the local economy. In total, these sectors accounted for 90% of the total cumulative economic effects of tourism in the area.

Salaries and wages earned by workers in the tourism and hospitality industry (induced effects), on the other hand, greatly affect government, education services and health and social services. Dentists, physicians and hospitals reap substantial benefits from visitor spending, accounting for nearly 13% of the total induced impacts.

The impact on public revenues is also significant. A total of US$202 million were collected in taxes, of which US$85 million and US$117 million were federal, state and local taxes, respectively. Of the latter, US$39 million was generated through property tax, again indicating the relevance of induced effects. The amount of US$202 million excludes room tax. The study estimated the total amount of room tax at US$25,541,123.90.[3] The amount of tax generated due to visitor spending equals, in 2004, a saving to each resident of the county of an amount of US$891.

Conclusions and implications

The nature of the tourism product implies that the government should be involved in the production process in order to address the issues of suboptimality and supply of public goods. The presence of the government in the production of the goods elicits questions and concerns about accountability and transparency in the decision making process. In other words, if public money is to be used to fund tourism programmes, events and development, it is only logical that the government should demonstrate that its involvement would render economic benefits to the citizenry.

The issue to address, then, is how to measure the contribution of tourism to the economy. Three strands in the literature which concern themselves with the measurement of tourism economic contribution were identified: cost and benefit models, the I–O/SAM system, and the CGE model. Each one was conceptually dissected with their strengths and weaknesses. For example, the I–O/SAM system turned out to be too rigid, but very helpful in the case of assessing economic impacts in confined areas and effects in the short run. The CGE model, on the other hand, showed great flexibility and great potential in assessing the long-run effects of tourism in larger geographical regions (countries).

The study indicated that discussion about the measurement method should focus, therefore, on the specific needs of the user. These needs could be ascertained by answering three questions: (1) to who is he or she accountable (county, state or federal level); (2) what is the time span under review (more or less than one year); and (3) what is the purpose of the study (to justify the investment to its direct constituents). Based on these answers, the study decided

Table 6. Economic impact of visitor spending in Osceola County, 2004.

	Direct impact	Multiplier	Total impact
Output	US$1.13 billion	1.46	US$1.6 billion
Employment	18,398	1.26	23,175
Income	US$0.61 billion	1.43	US$0.87 billion

that an I–O model was more appropriate in the case of the Kissimmee/St Cloud area.

For this study, IMPLAN Pro 2.0 was used to determine the multipliers. The tourism expenditures in the region are likely to have significant short-term impacts, which IMPLAN predicted would spread over 189 of the 192 industrial sectors in the county. Output or total sales impacts greater than US$100 million could affect 12 sectors and output impacts greater than US$10 million could affect 72 sectors. Similarly, value added impact greater than US$100 million could affect eight sectors and value added greater than US$10,000 could affect 44 sectors.

The values of the total output multiplier at 1.46, income multiplier at 1.43 and labour at 1.26 compare favourably with the range of values found in other studies (Table 6). For example, the aggregate IMPLAN Type SAM sales multiplier for a typical tourist spending pattern is 1.6 for the state model, about 1.45 for metropolitan regions and 1.3 for rural regions (Borden *et al*, 1996).

The different values of the multipliers for each sector indicate their relative degree of interdependency within the economy. These values provide insightful information for policymakers. Depending on the priorities that policymakers attribute to economic sectoral/industry interdependencies, income generation or job creation, they can encourage tourist spending in the productive sector with the highest multiplier. For example, if the policy focus is to stimulate stronger sectoral interdependencies, then tourists should be encouraged to spend more on eating out, engagement with amusement parks and attractions and staying in hotels. On the other hand, if the policy focus is on job creation then tourists should be encouraged to spend more on car rental, amusements and attractions and hotels.

Finally, in considering those impacts, it is important to keep the limitations of an I–O/SAM system in mind. It is static, linear and does not consider structural economic changes. Even with these limitations, I–O/SAM systems can be very useful for estimating the magnitude of an economic impact and understanding how an economic activity spreads through an economy from the backward (provider) and forward (buyer) linkages ($a_{ij} = z_{ij}/x_i$) among industries. Furthermore, it is a quick way to get a snapshot of the return to residents. The knowledge of the groups that benefit most (or least) could be of great value when seeking public resources.

Endnotes

1. The KSCVB partially funded this study.
2. The BEA defines the distance as within 50–100 miles away from home for the USA; the Consumer Expenditures Survey of the Bureau of Labor Statistics uses 75 miles; the American Travel Survey of the Bureau of Transportation Statistics uses 100 miles, while private surveys use 50–100 miles.

3. The tourism development tax (TDT) collections for calendar year 2004 totalled US$27,039,340. The small difference in the value estimated by the model and its actual value may be due to undersampling in the lodging sector.

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