

# Tourism demand and expenditure



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Panel data analysis has appeared in tourism demand research (Eilat and Einav, 2004; Garin-Munoz, 2007; and Naude and Saayman, 2005). The panel data models that were used in the literature are pooled logit regression, the generalized method of moments (GMM) procedure of Arellano and Bond (1991), generalised least squares (GLS) panel data regressions, and ordinary least square (OLS) panel data regressions (which comprise of fixed and random effects models). Panel data analysis has some advantages over the time series econometric models. It incorporates much richer information from both time series and cross sectional data. This approach also reduces the problem of multicollinearity and provides more degrees of freedom in the model estimation. Therefore, it is suitable for forecasting the demand for tourism when the time series for all variables are shorter, and cross-sectional information on these variable are also available. In spite of its advantages, the panel data approach has rarely been applied to tourism demand analysis. Four exceptions are found in the post-2000 literature. Ledesma-Rodríguez and Navarro-Ibáñez (2001) used the panel data method to model the demand for Tenerife tourism and established both static and dynamic panel models. In addition, Naudé and Saayman (2005) and Roget and González (2006) both employed the same panel data approach to examine

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demand for tourism in 43 African countries and the demand for rural tourism in Galicia, Spain, respectively.

## **Dependent variable**

Selecting a suitable variable for dependent variable in tourism demand model is important. Gang et al (2006) in a study as: “Recent Developments in Econometric Modeling and Forecasting” with comparing tourism demand models indicates that Compared to tourism demand studies prior to 1990, the measures of tourism demand have not changed much. Tourist arrivals were still the most common measure in the last decade, followed by the tourist expenditure. In particular, tourist expenditure, in the form of either absolute values or budget shares, is required by the specification of demand system models, such as the linear expenditure system (LES) and the AIDS. Compared with the tourism literature before 1990, recent studies pay more attention to disaggregated tourism markets by travel purpose (for example, Morley 1998; Turner et al 1998; Turner and Witt 2001a). Amongst various market segments, leisure tourism attracted the most research attention. 12 studies focused on this particular tourism market (for example, Ashworth and Johnson 1990; Kulendran and Witt 2003b; Song, Romilly, and Liu 2000; Song, Witt, and Li 2003). Different market segments are associated with different influencing factors and varying decision-making processes. Therefore, studies at disaggregated levels give more precise insights into the features of the particular market segments. As a result, more specific and accurate information can be provided to develop efficient marketing strategies.

## **Explanatory Variables**

Based on the tourism economic theory the arrival of tourist is an encouraging factor for another person that will be travelling to a certain destination. Therefore whatever the number of tourists arrival in the current year in a certain destination then, may be the tourist would come back to this country next year if they have had a good experience from that particular destination. In the other hand, the information about the destination extends as people share their holiday experiences with relatives and friends; therefore it can decrease the rate of uncertainty for potential visitors to that destination. According to Song, (song et al., 2003) the number of people choosing a certain destination in any year depends on the number of people that chose it in the past years. There are many studies that used the lagged dependent variable to explain the tourism demand. For example habibi(2009), Witt and Martin (1987), Fujii and Mak (1981), Garin-Munoz (2007), Garin-Munoz and Martin Montero (2007).

Garin-Munoz (2007) discussed the justifications of including a lagged dependent variable in tourism demand models. Two possible justifications are provided. Firstly, there is less uncertainty associated with holidaying in a country that you are already familiar with, compared with travelling to a previously unvisited foreign country, also tourism is generally risk averse and may feel more comfortable in choosing the same previous destination country. Secondly, knowledge about the destination extends as people talk about their holiday, thus reducing the uncertainty for potential visitors to that destination.

Own price: The appropriate form of the price variable is by no means clear.

In the case of tourism there are two elements of price: the cost of travel to the destination; and the cost of living for the tourist in the destination.

Although the theoretical justification for including transport cost as a demand determinant does not appear to be disputed, many authors exclude this variable from the set of explanatory variables on the grounds of potential multicollinearity problems and lack of data availability. (In fact, multicollinearity need not be a problem; instead, it may be a sign of cointegration, which would suggest the use of error correction models.) In certain studies where econometric forecasting models have been developed for international tourism demand, a specific destination tourists' cost of living variable is incorporated in the models. Usually, however, the consumer price index in a country is taken to be a proxy for the cost of tourism in that country. In general, this procedure is adopted on the grounds of lack of more suitable data, e. g. an index " defined over the basket of goods purchased by tourists, rather than over the usual typical consumer basket" (Kliman, 1981, p. 490). (In fact, such indices are now published for certain countries and major towns.) Whichever destination price variable is used, it needs to be adjusted by the rate of exchange in order to transform it into origin country currency.

Exchange rates are also sometimes used separately to represent tourists' living costs. Although they usually appear in addition to either a specific tourists' cost of living variable or a consumer price index proxy, they may be the sole representation of tourists' living costs. The usual justification for including an exchange rate variable in international tourism demand

functions is that consumers are more aware of exchange rates than destination costs of living for tourists, and hence are driven to use exchange rate as a proxy variable (Gray, 1966; Artus, 1970). However, the use of exchange rate alone can be misleading because even though the exchange rate in a destination may become more favourable, this could be counterbalanced by a relatively high inflation rate.

Empirical results evaluating the precise form of the tourists' cost of living element of the own price variable which should be included in econometric forecasting models indicate that the exchange-rate-adjusted consumer price index (either alone or together with a separate exchange rate variable) is a reasonable proxy for the cost of tourism, but that exchange rate on its own is not an acceptable proxy (Martin and Witt, 1987).

Substitute prices: Economic theory suggests that the prices of substitutes may be important determinants of demand. For example, an increase in holiday prices to substitute destination country may increase demand for holidays to another country.

Mostly, those substitution possibilities allowed for in international tourism demand studies are restricted to tourists' destination living costs. A common form in which substitute prices enter the demand function is to specify the tourists' cost of living variable in the form of the destination value relative to the origin value, thus merely permitting substitution between tourist visits to the foreign destination under consideration and domestic tourism. The usual justification for this form of relative price index is that domestic tourism is the most important substitute for foreign tourism. Other studies incorporate

substitute prices in a more sophisticated manner; they allow for the impact of competing foreign destinations by specifying the tourists' cost of living variable as destination value relative

to a weighted average value calculated for a set of alternative destinations, or by specifying a separate weighted average substitute destination cost variable. Just as tourists' living costs in substitute destinations are likely to influence the demand for tourism to a given destination, so travel costs to substitute destinations may also be expected to have an impact.

Furthermore, if the data are disaggregated by transport mode, then travel cost to the same destination by alternative transport mode(s) would influence tourism demand to a particular destination by a given transport mode. However, although some theoretical attention has been paid to the notion of substitute travel costs in the literature, they rarely feature in tourism demand functions.

If a price variable is specified as own price relative to substitute prices, then the variable is listed generally under both own price and substitute prices in Table 1. The only exceptions are the very restrictive cases where the sole substitute destination price considered is the cost of

Although travel costs had been considered in over 50% of the studies reviewed by both Crouch and Lim, in recent studies they did not attract as much attention as before, with only 24 studies including this variable. As precise measurements of travel costs were lacking, especially of the aggregate level, proxies such as airfares between the origin and the destination had to be used. However, only in a few cases did the use of

proxies result in significant coefficient estimates. Another reason for insignificant effects of travel costs may be related to all inclusive tours where charter flights are often used, and

Hence airfares bear little relation to published scheduled fares. The deterministic trend variable describes a steady change format, which is too restrictive to be realistic and may cause serious multicollinearity problems. With this borne in mind, recent studies have been less keen to include it in model specifications. This variable only appeared in 11 reviewed studies. To capture the effects of one-off events, dummy variables have been commonly used. The two oil crises in the 1970s were shown to have the most significant adverse impacts on international tourism demand, followed by the Gulf War in the early 1990s, and the global economic recession in the mid 1980s. Other regional events and origin/destination-specific affairs have also been taken into account in specific studies.

It should be noted that no effort has been made to examine the impact of tourism supply in the tourism demand literature, which means that the problem of identification has been ignored. An implicit assumption of this omission is that the tourism sector concerned is assumed to be sufficiently small and the supply elasticity is infinite. To draw more robust conclusions with regard to demand elasticity analysis, however, this condition needs to be carefully examined in future studies.

Ferda Halicioglu, (2004) in a paper as: “ An ARDL Model of International Tourist Flows to Turkey” tries to apply a co-integration technique on the international tourist arrivals to Turkey. This study empirically examines



aggregate tourism demand function for Turkey using the time series data for the period 1960-2002. The total tourist arrivals into Turkey are related to world income, relative prices and transportation cost. he employ bounds testing co-integration procedure proposed by Pesaran et al. (2001) to compute the short and long-run elasticity's of income, price, and transportation cost variables. The empirical results indicate that income is the most significant variable in explaining the total tourist arrivals to Turkey and there exists a stable tourism demand function.

Maria M. De Mello et al (2005) in a study A flexible general form of a Dynamic Almost Ideal Demand System (DAIDS) is derived to analyze the UK tourism demand for its geographically proximate neighbors France, Spain and Portugal, in the period 1969-1997. The results show that DAIDS is a data coherent and theoretically consistent model, providing evidence of the robustness of this methodology to conduct tourism demand analysis in a temporal context. Moreover, the dynamic model offers statistically strong evidence on the inadequacy of the orthodox static AIDS and the other restricted models to reconcile consistently data and theory within their formulations. Estimates for tourism price and expenditure elasticity's are obtained, permitting a comparative analysis of the relative magnitudes and statistical relevance of long and short run sensitivity of the UK tourism demand to changes in its determinants.

Sara A. Proenca (2005) in " Demand for Tourism in Portugal: A Panel Data Approach" use a panel data techniques to estimate the demand function of tourism in Portugal by considering four main countries as the basic tourism suppliers, Spain, Germany, France and the U. K., responsible for almost 90%

of the total tourism inflows in this country. In the demand function she introduces both the demand factors include per capita income, relative prices and the supply factors (public investment ratio, accommodation capacity) to explain tourism performance in Portugal. The result of the estimation the models shows that per capita income is the most important demand determinant and accommodation capacity the most important supply determinant explaining thus the tourism flow in Portugal and also, the accommodation capacity is the most important factor in attracting more tourism to this country.

Vani K. Borooah (1999) in "the supply of hotel rooms in Queensland, Australia" examines the supply decisions of hotel and motel owners with respect to guest rooms. This study employed an econometric analysis of supply responses in the hotel sector in the three Queensland regions of the Gold Coast, Whitsunday, and Cairns. The result shows that the supply of guest rooms, in all three regions, was strongly responsive to increases in earnings (per occupied room) but was less influenced by increases in the room occupancy rate or by changes in the interest rate. But the relative strengths of earnings and occupancy rates in influencing supply responses may have much to do with the aggregation of individual hotels into a single sector. Also, increases in earnings might be a generalized phenomenon, affecting all hotels, and thus evoking a strong supply response from the hotel sector. In addition, increases in occupancy rates might be restricted to a subset of hotels, which are at the margin of being capacity- constrained, evoking a weaker response from the sector.

Gonzalez and Moral (1995), in a study as "the international tourism demand in Spain", try to find a precise indicator to measure the external demand of the tourist sector as one of the main problems in analyzing the potentialities is. They use tourists spending as the dependent variable, defined as the product of three factors: the number of tourists, the length of their stay and the daily average spending. Also About this subject Cunha (2001) argues that the number of entrances is not a good approximation to express tourism demand since it ignores one of the most important aspects in this sector: the demand of goods and services that tourists require during their permanence.

Mello and Sinclair (2002), alternatively, use the share of tourism spending of the origin country to other destination countries to study tourism demand in the U. K. The authors argue that this variable captures the consumption behavior of the tourists and explains the spending component of this economic activity. It is possible to observe an increase in the tourism inflow accompanied by a reduction in spending explained by higher domestic inflation and shorter length of stay. For this reason the expenditure approach is preferable to the inflows approach to study the demand for tourism behavior from the point of view of the hosting country. Rodriguez and Ibanez (2001) use the number of visitors lodged in the destination country as the dependent variable to study the demand for tourism in a panel data approach. The choice of this variable to express tourism demand (in comparison with the number of tourist entrances) has the advantage to consider the length of the stay and to exclude tourists that are hosted to family or friends houses. According to the literature review, the most appropriate variable to be used as the dependent variable in the demand for

tourism equation is tourism receipts from the point of view of the receiving country or tourism spending from the point of view of the supplying country (Tse, 1999; Lathiras and Siriopoulos, 1998). However, according to Crouch and Shaw (1992), almost 70% of the studies that estimated tourism demand functions have used the number of visitors (entrances) as the dependent variable (Quiand Zhand, 1995; Morris, Wilson and Bakalis, 1995; Kulendran, 1996; Akis, 1998). The main reason for this choice has been the unavailability of data on tourism spending.

Naude , W. A. & A. Saayman (2004) in a paper about determination of tourism arrivals in Africa use cross-section and panel data for the period 1996 to 2000 to identify the determinants of tourism arrivals in 43 African countries, taking into account the country of origin of tourists. The results suggest that political stability, tourism infrastructure, marketing and information and the level of development in the destination are key determinants of travel to Africa. Typical “ developed country determinants” of tourism demand, such as the level of income in the origin country, the cost of travel and the relative prices, are not that significant in explaining the demand for Africa as a tourism destination. They are recommended that attention should be given to improving the overall stability of the continent and the availability and quantity of tourism infrastructure.

ONeil Malcolm (2003) in study about Tourism Maturity and Demand in Jamaica estimates a demand function for Jamaica’s tourist product. An error correction model (ECM), structural time model (STM) and an autoregressive moving average (ARIMA) model were employed. The ECM was more robust than the ARIMA and STM models in predicting tourism demand. The ECM and

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ARIMA models captured the major turning points in the series well and provided reasonably good forecasts. In contrast to the findings of Henry and Longmore (2002), the results indicate that source country income is significant. The explanatory power of the ECM improved with the inclusion of the tourism density ratio, implying that researchers should include interaction factors in tourism demand models. The empirical analysis indicates that Jamaica has a mature tourism product. The empirical analysis indicates that tourism demand is predominantly explained by income in source country. The absolute price, relative price and exchange rate have very marginal, and in most cases no significant impact on tourism demand. The finding also suggests that Jamaica is a maturing destination for the USA and UK markets. Of the three models estimated the ECM was the most appropriate in explaining tourism demand. It was found that the inclusion of the tourist density ratio in the regression improved the explanatory power of the model. The unit price of the service was found to be insignificant.

Smith, S. L. J. (1995) describes the challenges with describing and defining tourism. Particularly, it focuses on defining tourism as a demand-side concept – from the perspective of the person taking the trip or supply-side – from the perspective of the business supplying the tourism product or service. On the demand-side tourism can be classified by length of stay, type of expenditure, type of traveler, type of trip, transport mode or accommodation type. On the supply-side, the tourism industry can be classified first by whether the business and secondly by the type of tourism product such as passenger air transport, camping, recreation and entertainment.

## **Empirical Study in Tourism Tax**

Base on Gooroochurn and Sinclair (2005) study that tourism taxes are welfare-enhancing since the destination country can transfer the tax to foreign tourists. They found that tax on tourism was more efficient and equitable than levying tax on other sectors in country. However, Gosling, Peeters, Sceron and Dubois (2005) argue that destinations adopting eco-taxes on tourism may possibly suffer from welfare loss. Similarly, Jensen and Wanhill, (2002) suspect that worldwide increases in both numbers and rates of tourism taxes in recent years are not welfare-enhancing, since governments seem to consider tourism taxes as “easy money”, giving them license to deviate from economic rationality. The past literature includes a number of studies on the impact of tourism taxes on destinations' welfare, often with controversial findings (Bird, 1992; Clark and Ng, 1993; Dimanche, 2003; Forsyth and Dwyer, 2002; Gago, Labandeira, Picos, and Rodriguez, 2009; Levine, 2003; Litvin, Crofts, Blackwell, and Styles, 2006; Mak, 1988; Mayor and Tol, 2007; Palmer and Riera 2003; Piga, 2003).

According to Corey Gerant Mathews, (2004), several sources suggest that reductions or the elimination of tourism marketing have a negative effect on travel to and revenues of the target country, On the other hand, several evidence suggest that tourism tax could support other plans in the destination country; such as: education, transportation, life guarding, zoos, and other programs and services that would also draw additional tourists to the area.

Mak and Nishimura (1979) drew a conclusion in which they estimated the influence of a hotel room tax on Hawaii's tourist industry using single

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equation estimation approaches. They utilized cross ' section data on individual visitor parties, had collected by Hawaii Visitors Bureau (HBV) in 1974. Like cross section demand studies, that study was detracted from by the difficulty and imprecision in measurement of the prices. A similar conclusion was reached by Bonham, Carl and Byron Gangnes (1996) in " Intervention Analysis with Co-integrated Time Series: The Case of the Hawaii Hotel Room Tax." In this article, they analyzed an intervention of a room tax levied by the state of Hawaii in 1987. In that study room tax was found not to have a noticeable statistically significant contribution to room revenues. They analyzed the ex-post effect of the room tax on revenues using a time series econometrics framework.

Hailin Qu, Peng Xu, Amy Tan (2004) in a paper as " A simultaneous equations model of the hotel room supply and demand in Hong Kong " use a system of include demand and supply equations to identify the important factors that influence the hotel room supply and demand, and their overall impact on the Hong Kong hotel industry. In the model of tourism supply they used average hotel room rate as dependent variable. They employed 19 years of time series data in simultaneous equations econometric framework. The result of estimation of model show that the overall goodness-of-fit of both demand and supply models is very high, suggesting high predictive power. More ever, Empirical results indicate that " hotel room price" and " tourist arrivals" are significant factors driving the demand for hotel rooms. In addition, " 1990-91 recession" and " the 1997-98 Asian financial crisis" had a significant negative impact on the demand for hotel rooms in Hong Kong. At the same time, " hotel room quantity demanded", " room occupancy rate", "

last period's room price", " labor cost", " last period's average price of Grade A private offices", and " the Asian financial crisis" had a significant impact on room price in the short run.

H. Tsai et al,(2006) in " Examining the hotel room supply and demand in Las Vegas: A simultaneous equations model" try to identify the important factors that influence the hotel room supply and demand, in Las Vegas employing econometric variables in a simultaneous framework during 1992-1999. In the model of tourism supply they used average hotel room rate as dependent variable. The results show that room rate for the current month, the 3-month Treasury bill rate and gaming revenue per room for the 12-month prior are the three determinants of the room supply function, while consumer price index for the current month is the only determinant of the room demand function. This study also employs the 2SLS technique, but tests different econometric variables in the Las Vegas context.

At the beginning they modeled the empirical treatment of hotel room revenues employing a variant of the multi-input transfer function methodology developed by Box and Jenkins (Box, Jenkins and Reinsel, 1994). Their method extends the rudimentary transfer function model to include long term co-integration relationships between room revenues and major explanatory variables.

Once an appropriate pre-intervention model has been identified, it is applied to the post-intervention sample. Their model appears to provide strong evidence against any significant permanent effect of the room tax on either the level or growth rate of after-tax hotel room revenues and this is not a



surprising conclusion. As Bonham et al. (1992) indicated, a rise of 5% in room rates is less than 1.5% of the total cost of a typical Hawaiian vacation. Therefore, noticeable adjustments to room demand are improbable. The tax is invisible to the tourist when planning a Vacation as the tax is added to room bills on checkout. Hawaii was not imposing or rising room tax during the period of time. The Undesirable adverse effect of Hawaii's tax on competitiveness would decrease to the extent that taxes were increasing in competing markets.

John O. Spengler and Muzaffer Uysal(1989) in a study as: considerations in the hotel taxation process try to analysis the tax on hotel room. This paper is intended to put the notion of hotel taxation into perspective providing a framework of elements which tax experts and hospitality specialists deem important. Included tax elements consist of economic considerations, tax incidence, tax progressivity and equity, and tax exportability. ' These elements are also examined as part of. a process under conditions of inelastic and elastic demand. Finally, a brief discussion of taxation policy implications was provided. Given the importance . of the hotel tax to members of the tourism industry and policy makers, a synthesis of the key variables which influence the taxation process is paramount. This paper has explored these variables individually and in combination. It is hoped that this effort has furthered a better understanding of the hotel taxation process. This understanding, however, should be backed by reliable and relevant research.

In specific, research should be conducted which addresses the First, the demand supply elasticity's for visitor destinations should be studied. Findings

from this line of study will determine in general whether it is the visitor or the hotelier who bears the greater burden of the tax. This will. Provide answers to the question of tax incidence. Second, research should address questions relating to the income characteristics of visitors, the proportion of business travelers to tourists, and the economic consequences of the tax for tour operators, meeting planners and corporations. These questions concern the concept of tax equity and progressivity. Third, research is suggested regarding the exportability of a hotel tax. Studies addressing the percentage of hoteliers and employees who are local residents, and the percentage of hotel guests who are residents of the local community would be relevant. Last, questions concerning the use of funds derived from the tax must be answered. Research should address whether funds used in the past for promotion and upgrading visitor attractions have increased visitor demand. In addition, the most appropriate and efficient use of funds should be addressed. With sufficient information supplied by research, and adherence to general guidelines in policy formation, legislators will be better able to make just and rational decisions concerning the hotel tax. E.

Aguilo! et al. (2005) in a study as “ The short-term price effect of a tourist tax through a dynamic demand model for the Balearic Islands. The objective of this paper is to identify the market’s sensitivity to price changes in travel-related services or groups of services, assuming that one of the main factors that influences travel decisions is the information on the destination that consumers receive. In order to include this ‘ effect, the study applies a combination of a diffusion model and a traditional economic utility theory model to tourists visiting the Balearic Islands· (Spain) from the United

Kingdom, Germany, France and the Netherlands. The result shows that The effect of the tourist tax on tourism supplies has not been assessed.

Richard M. bird (1992) in “ Taxing Tourism in Developing Countries” show that in principle there is a strong economic case in many, countries for taxing tourism more than at present, but that the nature of the industry and administrative difficulties severely limit what can be done in practice. This analysis and a review of the fiscal instruments available to most developing countries suggest three main conclusions: first, more attention should be paid to introducing adequate “ charging”

Policies where possible: second, special taxes on hotel accommodation are generally the key to tourist taxation; and third, there is little reason to provide special incentives for investment in the tourist industry. According to Bonham, Carl and Byron Gangnes (1996) in “ Intervention Analysis with Co integrated Time Series: The Case of the Hawaii Hotel Room Tax.” Room taxes are touted by proponents as a way to shift the local. tax burden to non-residents, while the travel industry claims the levies significantly harm their competitiveness. In this study, they analyze the effect on hotel revenues of the Hawaii room tax using time-series intervention analysis. They specify a time series models of revenue behavior that captures the long-term co-integrating relationships among revenues and important income and relative price variables, as well as other short-run dynamic influences. They also, estimate the effect on Hawaii hotel room revenues of the 5% Hawaii hotel room tax introduced. in January 1987. The result show that no evidence of statistically significant tax impacts.

Fujii, Edwin, Mohammed Khaled and James Mak (1985) in a paper as “ The Exportability of Hotel Occupancy and Other Tourist Taxes “ attempt to examine the incidence and exportability of an ad valorem hotel room occupancy tax for Hawaii vis-a-vis alternative tourist taxes. The study employs a system approach and times series data (1961-1980). Results indicate that a hotel room tax is readily, though not fully, shifted/exported. It is more readily exported than similar taxes levied on excise/sales tax, since taxes levied on non-lodging expenditures also fall heavily on residents. Results also suggest that taxes imposed on tourist spending have a moderately large negative output effect on the visitor industry.

Hiemstra, Stephen J. and Joseph A. Ismail (1992) In their study as “ Analysis of Room Taxes Levied on the Lodging Industry” try to summarize a study of the impacts of room taxes on the lodging industry by (1) reporting the findings of Phase 1I of an overall study assessing the negative impacts on number of rooms rented of room taxes levied on the lodging industry, and (2) applying the price elasticity of market demand found inst~p 1 to the average amounts of room taxes paid, as measured in Phase I of the overall study. The elasticity measurement comes from a statistical model based on data from a national pro