

ASSESSING THE IMPORTANCE OF ENVIRONMENTAL VARIABLES IN TOTAL TOURISM DEMAND

*Raul Gouvea, FIT Department, Anderson Schools of Management, University of New Mexico
Albuquerque, NM (87131), rauldg@unm.edu*

*Jana Hranaiova FIT Department, Anderson Schools of Management, University of New Mexico
Albuquerque, NM (87131), hrganai@unm.edu*

*Sul Kassicieh, FIT Department, Anderson Schools of Management, University of New Mexico
Albuquerque, NM (87131), sul@unm.edu*

ABSTRACT

In the last decades several countries have approached tourism as an economic alternative to diversify their export structure and boost their domestic economies. Recently, ecotourism has received substantial support and attention by a number of countries around the world as an avenue to reconcile economic development and growth with environmental sustainability. This paper examines whether the importance of environmental variables that are likely to attract eco-tourists has achieved a level where they would create a significant driving force for total tourism demand. A cross-section study of 53 countries, encompassing developed and less developed countries is used for the analysis. A pull model is specified for tourist arrivals. Results indicate that despite all the increasing attention being paid to ecotourism, environmental variables still do not appear to have high relevance for tourism demand. The degree of country's infrastructure development and historical, cultural, and natural landmarks appear to be the driving forces for attracting tourists.

INTRODUCTION

In the last two decades several countries have approached tourism as an economic alternative to diversify their export structures and boost their domestic economies (Awazi, 2002; Aronsson, 2000; Weaver, 1998). In 2000, global tourist arrivals reached 699 million. In the same year, tourism and travel accounted for 12.8% of world exports, 10.7% of the world's gross world product, and for 8.2% of the world's total employment (WTTC, 2003).

By the year 2010, the World Tourism Organization (WTO) expects that global tourism revenues will expand to US\$ 1.5 trillion (www.world-tourism.org). In Latin America, the expectation is that by 2010 the Latin American travel and tourism industry will generate US\$ 104 billion (WTTC 2002). This upward trend has lead a number of countries to engage in the development of policies and business strategies that encourage their participation in the global tourism industry.

Globalization also brought to the forefront of the global tourism industry the discussion of more environmentally sound tourism development strategies (Mastny 2002; The World Bank, 2001). The 1992 United Nations Conference on Environment and Development (UNCED) fostered the debate on the environmental impacts of the global tourism industry (Aronsson 2000; Fennell 2000; Dangerfield and Tyler 1999).

METHODOLOGY

Model. To explore the importance of environmental considerations for tourism, the paper specifies an econometric pull model capturing the impact of environmental variables on tourist arrivals (Frechtling

2001; Hughues, 2002; Lim 1997; Qiu and Zhang 1995; Witt and Witt 1995). Thus, a hypothesis is tested that if environmental variables are a significant driving force of total tourism, the following variables would be important factors for the number of tourists: a) environmental sustainability index (ESI), b) number of birds, mammals and higher plants per square kilometer, c) percent of total land area protected as national parks (Protected Area) and d) the number of websites with ecotourism content (Websites).

In addition, controlling variables for economic development, tourism infrastructure, degree of urbanization, and other tourist landmarks are included. A GDP per capita variable (GDP) controls for the effect of the degree of the economic development of the destination country. Leisure travelers may prefer the more developed countries with highly developed tourist amenities when deciding about their travel destinations. The number of Hotel Rooms (HotelRooms) and Urbanization Rate are included to represent the level of tourism infrastructure that may be a decision factor for eco travelers. Urbanization rate is the percent of land that is urbanized. World Heritage Sites variable serves to capture the effect of tourist attractions other than eco-variables. It measures the number of natural, historical and cultural landmarks in each country that are included in UNESCO's World Heritage list. The list identifies cultural and natural properties of "outstanding universal value".

All coefficients are expected to be positive, as the variables should have a positive impact on environmentally motivated tourist visits and thus on total tourism demand.

The following model was run using the ordinary least squares method:

$$TouristArrivals = \alpha_0 + \alpha_1 ESI + \alpha_2 Mammals + \alpha_3 ProtectedAreas + \alpha_4 WebSites + \alpha_5 HotelRooms + \alpha_6 GDP + \alpha_7 UrbanizationRate + \alpha_8 WorldHeritageSites + \varepsilon$$

The dependent variable is in turn defined as the number of tourist arrivals registered in hotels in year 2000 and as the change in tourist arrivals between years 1990-2000. Biodiversity is approximated by the number of mammals, bird, and plants species per square kilometer.

Data. Data were collected for 53 countries of the world (see Appendix for the list of countries). Countries were selected based on availability and consistency of data representing different eco-systems. Tourism demand was measured by the number of tourist arrivals in hotels as measured by the World Travel and Tourism Council (WTTC). The environmental sustainability index (ESI) is published by the Center for International Earth Science Information Network, Columbia University. The number of species of mammals, birds and plants was obtained from the 2001 World Development Indicators published by the World Bank. The percentage of national territory protected as national parks was also obtained from the World Bank publications. Websites represent the number of web citations for ecotourism as listed by Yahoo.com for each country. Number of hotel rooms is published by the Euromonitor. GDP and urbanization rates were also published by the World Bank. World Heritage Sites is the number of cultural and natural landmarks listed in the October 2002 issue of the National Geographic Magazine.

RESULTS

Table 1 presents the results for two models: a) first the levels model, where the dependent variable is defined as the number of tourist arrivals in registered hotels in year 2000. The second model is a flow model, which measures the effect of the eco-variables on the change in the number of tourist arrivals in

hotels between years 1990-2000. This paper hypothesizes that with the surge in ecotourism in recent years, eco-variables will have a more significant impact on the change than on the levels.

Table 1. Regression results

| | Number of tourist arrivals in hotels (2000) | Change in the number of tourist arrivals (1990-2000) |
|---|---|--|
| Intercept | -4862.92 | -483.49 |
| Environmental Sustainability Index | 57.07 | -15.20 |
| Proportion of Mammals by sq Km | -0.15 | -0.11 |
| Nationally protected areas ^a | -2.75 | -5.64 |
| Web Citations | 0.05 | 0.02 |
| Number of hotel rooms in 2000 | 0.01* | 0.00 |
| GDP per capita PPP ^b | 0.25 | 0.13 |
| Urbanization Rate ^c | -3126.26 | -821.99 |
| World Heritage Sites | 964.00* | 533.32* |
| <i>R squared</i> | 0.68 | 0.53 |
| <i>F-stat</i> | 11.4 | 6.2 |
| <i>Degrees of Freedom</i> | 44 | 44 |

a. Measured as percent of total land

b. Measured in 2000 international US\$

c. Urban population as percent of total population

* The asterisk denotes significance at 5% level.

Contrary to expectations, the results show that eco- variables do not play a significant role in driving tourism demand. This holds for both the levels and flow model. The hypothesis of significance was based on the recent global surge in ecotourism interest, reaching an estimated 2-4% of total tourism worldwide. The results indicate that tourism is not driven by considerations of environmental sustainability, abundance of national parks and biodiversity. Cultural, historical, and natural landmarks seem to be one of the major driving forces for tourism. Number of hotel rooms positively affected tourist arrivals in year 2000, but did not have a significant impact on the change of tourist arrivals between 1990-2000.

The levels model performs relatively well, with F-statistic of 11.4; however, the significance is driven by two variables: a) Number of Hotel Rooms and, b) World Heritage Sites. Both significant variables have a positive impact on the number of tourists, where the Hotel Rooms is significant at 5% and World Heritage Sites at 1% level. Number of Hotel Rooms representing the measure of the degree of infrastructure development may be rendering the GDP insignificant.

No eco- variables were significant. Thus, the results indicate that whether the country ranks high in the ESI rankings or if it has a high proportion of national parks does not significantly affect tourist decisions to visit a country. The same holds for the degree of biodiversity. This lack of significance could be a result of still a low proportion of ecotourism in the total tourism demand.

REFERENCES

Provided upon request.