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Ecotourism-Linked Businesses: Evidence from the Caribbean
Windward Islands**

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Abstract

The purpose of this study was to evaluate the willingness of businesses directly dependent on ecotourism to pay for the protection of the environmental assets marketed as "ecotourism products." The open-ended contingent valuation method was employed to elicit willingness to pay (WTP) in the four Windward Islands of the Caribbean with respect to organizational, economic and policy characteristics of the respondents. Most of the businesses were relatively small, with gross annual revenue less the EC \$250,000 (US \$92,251). The following profile for a firm willing to pay for environmental amenities and services was drawn from this study: smaller businesses with highly educated persons in management who are in direct contact with ecotourism sites, have previously contributed to environmental causes but are not members of environmental/ecological organizations, and are fully Caribbean owned. Government policymakers and tourism officials of the Windward Islands can use such profile information in designing training and environmental awareness programs and targeting stakeholders who can most benefit from such programs.

Key words: survey, sustainable tourism, Tobit model, WTP profile

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**Willingness to Pay for Environmental Preservation by Ecotourism-Linked Businesses:
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The Caribbean Basin is constructed on a geopolitical basis with four major cultural-linguistic sub-systems (English, French, Dutch, and Spanish) stretching along a coastal arc from Mexico to Brazil. The region is differentiated by a number of economic sub-groups, ranging from tourism-dependent small island states, such as St. Kitts and Antigua and Barbuda, to larger islands and mainland states such as Jamaica and Trinidad and Tobago with a combination of tourism, agricultural, manufacturing, and extractive industries (Gayle and Goodrich 1993).

With increases in disposable income in industrialized countries, improved transportation throughout the Caribbean countries, economic pressures arising out of the need to generate revenue and employment, and the economic vulnerability of small island states, many Caribbean governments have made conscious decisions to promote tourism as a development strategy. By 1985 the Caribbean was the largest regional supplier of tourism among developing countries, offering a wide range of tourist attractions such as heritage, ethnic, sport, health, resort, and cruise tourism (Holder 1988, Bell 1993, Gayle and Goodrich 1993).

Tourist stay-over arrivals (more than one night at an island destination) in the Caribbean have more than doubled between 1980 and 1996 with an annual growth rate of

4.9%, surpassing the 4.7% annual growth rate for international tourist arrivals worldwide. Presently more than 500,000 people are employed in the tourism industry in the Caribbean. In 1996 gross visitor expenditure was estimated at US \$13,340 million, an increase of 5.6% over 1995, with tourist stopover arrivals (only a few daytime hours at an island destination) of 14.8 million including 10.7 million cruise passenger visits. Over the next decade an estimated 36% increase in tourist arrivals is anticipated, with a potential expansion in the travel and tourism industry of 70% by the year 2007 (Holder 1993, CAST 1999).

It is no surprise, therefore, that concern has been voiced over the effect of such a powerful economic system on the ecosystems of the Caribbean's fragile physical environments. The conflict which has arisen between tourism and environmental protection has been largely due to the difficulties of protecting the environment in the face of economic pressures to promote the growth of tourism, combined with a lack of initiative in developing alternatives to beach-front tourism (Miller 1988).

The growth of the tourist industry in the Caribbean region has been associated with massive environmental costs, including erosion of beaches, the destruction of coral reefs, marine and coastal pollution from watersports, and the dumping of waste and untreated sewage. In some islands there has been indiscriminate exploitation of scarce and fragile natural resources, devastation of wetlands, and sand mining. Because of previous environmental damage from poorly regulated tourism and because of the opportunity prompted by the emergence of the popularity of nature-based holidays, the Caribbean eagerly embrace the concept of ecotourism (Conway 1993, Pattullo 1996). By the beginning of the 1990s nature-based tourism was the fastest growing sector in international tourism (Goodwin 1996).

The numerous problems associated with ecotourism development in the Caribbean have been mainly because of a lack of regulatory policies or enforcement of existing policies. Some Caribbean governments have been slow to redefine tourism policies, while a concerted effort by other Caribbean governments and non-governmental organizations has led to cooperation in the re-evaluation of regional tourism and attempts to restructure policies in support of environmentally friendly tourism (ECLAC/UNEP 1988, Edwards, McLaughlin, and Ham 1998). Although some Caribbean governments have passed legislation and implemented measures to minimize the environmental impacts of tourism in general, the rapid growth of this sector along with the costs of enforcement and the degree of cooperation received from businesses using the environmental product continue to be of concern for environmental sustainability. Notwithstanding the fact that long-term survival of tourism is dependent on sound environmental measures and identified policies, many entrepreneurs in the highly competitive Caribbean tourism market have expressed legitimate concerns of reduced short-run profits caused by the enforcement of these measures (Holder 1988, Weaver 1994).

STUDY AREA

Agriculture is the most important sector in terms of contribution to GNP, employment, and foreign exchange earnings for the OECS (Organization of Eastern Caribbean States). The level of dependence on agriculture, however, varies significantly among these countries. Among the Windward Islands, a subgroup of four islands of the OECS, the range is from high dependence in Dominica and St. Vincent to less so in St. Lucia and Grenada. Table 1 shows the inverse relationship that exists between tourism and agriculture within the OECS.

In the agricultural-led economies, there have been shifts since 1990 towards developing tourism. With the crises in the banana industry starting in the early 1990s, the governments of the Windward Islands were forced to give tourism a high priority. St. Lucia and Grenada have redoubled their efforts, while St. Vincent and Dominica focused on the tourism business in a serious way (Patullo 1996).

Dominica is the northern-most Windward island situated in the middle of the Lesser Antilles. Its rugged topography, rural ambience, and limited urbanization make it an ideal nature destination. Dominica has coined the title, "Nature Island of the Caribbean," as its logo for ecotourism promotion and offers services such as adventure excursions, habitat research, hiking, river bathing, sightseeing, whale watching, and scuba diving. The industry received a boost in the early half of 1997 when the boiling lake, the second largest in the world, was listed as a World Heritage Site (Wilkinson 1997). St. Lucia is situated south of Dominica and Martinique and has a unique blend of natural and man-made assets that appeals to the mass tourism market. St. Lucia has been the most aggressive of the four islands in promoting tourism through subsidizing air carriers and with investment tax incentives. St. Vincent and Grenada, situated south of St. Lucia, have followed similar patterns as Dominica and St. Lucia, respectively, although St. Vincent has not emphasized ecotourism as its tourism strategy to the extent of Dominica. Tourism travel statistics for the islands are shown in Table 2.

Businesses directly dependent on ecotourism activities in the four islands encompass tour operators, travel agents, hotels, guesthouses and lodges, tourism associations, and the like. Throughout the islands, local ownership primarily involves small businesses and varies

considerably from approximately 80% of total ownership in Dominica to less than 60% in St. Lucia (Wilkinson 1997).

A survey was conducted in the four Windward Islands from June 1999 to June 2000 to assess the perceptions of businesses that use the environmental amenities and to assess willingness to pay for the maintenance of environmental assets and amenities which they market as "ecotourism products." The survey also is used to evaluate the current level of awareness of ecotourism policies in the mostly small tourism business sector of the four Windward Islands. The study should provide useful information for the ecotourism industry and government policymakers for future development in the Caribbean.

METHODOLOGY

An open-ended contingent valuation questionnaire was designed to elicit individual respondents willingness to pay (WTP) for the protection of environmental assets and amenities. Over the last decade there has been widespread interest in the use of the Contingent Valuation Method (CVM) in environmental economics and policy fields because (1) CVM is the only practical means of estimating some kinds of environmental benefits, e.g., existence values, and (2) results from well designed, properly executed CV surveys seem to be as good as estimates obtained from other valuation methods (OECD 1994).

Hypothetical questions in a CV survey are designed to elicit the value that respondents place on a specified change in an environmental amenity or the maximum amount they would be willing to pay to have it occur. Truthful responses are direct expressions of values and can be interpreted as measures of compensating surplus. Compensating surplus is, therefore, a measure of an individual's welfare that determines the compensating payment that will make

the individual indifferent to the original situation q_0 and the opportunity to purchase the new quantity q_1 of goods and/or services for which price has changed (Freeman 1993).

In this study an open-ended CV questionnaire with a payment card was used to measure mostly small tourism business' WTP for the protection of ecotourism sites (a non-marginal change from q^0 to q^1). WTP is modeled as a function of business and socioeconomic characteristics and the expressed environmental policies of the firms, and can be evaluated as the producer surplus of the firms with rights to the initial policy situation q^0 . Therefore, WTP is a compensating surplus welfare measure, where the producer surplus can be defined as total revenue less total variable cost (including current taxes). Producer surplus, therefore, represents the amount the firm is willing to pay over and above taxes and variable costs and is an expression of the value placed on the quality of the environmental amenities used as eco-products. Firms are expected to contribute to the fund if their producer surplus is greater than zero.

A combination of in-person interviews and elicitation by mail with follow-up by telephone was used for the study from June 1999 to June 2000. A list of all tourism businesses that provided ecotourism experiences within the different islands was obtained from local telephone books, the Caribbean Hotel Association (1999), and local tourism departments. Because of the expense of in-person interviews and the time constraint, the randomly stratified sample by island is small, thus findings should be interpreted cautiously. Of the 33 questionnaires collected, five were unusable because important areas associated with WTP or socioeconomic characteristics were omitted.

The survey instrument consisted of three components: (1) a hypothetical description of the terms under which the quality and management of ecotourism sites could be maintained,

(2) questions regarding respondents' WTP for maintenance of the ecotourism sites and environmental policies, and (3) questions about the organizational, business and socioeconomic characteristics of the respondents.

To encourage participation respondents were assured that their responses would be kept confidential and would be destroyed after the research was finished. Additional information was provided to improve the survey participants' understanding of the concept of ecotourism and the impact of congestion or overuse of ecotourism sites. Respondents also were given a choice in selection of payment vehicle for maintenance of ecotourism sites: income tax or special fund. Business owners are accustomed to paying taxes on income throughout the Caribbean. If a special fund was selected, a choice was given for the organized management of funds, e.g., government, private sector, non-governmental organizations or some combination thereof.

RESULTS

Data Description

Respondent WTP ranged from a minimum of \$0 to a maximum of \$1,200 per year in Eastern Caribbean dollars (US \$442.80). Answers to direct, open-ended valuation questions yielded a data set encompassing 28 WTP point estimates.

Most of the businesses were relatively small (66.7%) with gross annual revenue less than EC \$250,000 (US \$92,251) per year with most (92.9%) being Caribbean or partly Caribbean owned. The largest group of businesses in the survey was that of hotels and guesthouses (35.7%). Almost one third (32.1%) were affiliated with an environmental or ecologically related organization. Half of the businesses had not contributed previously to environmental causes, and of the 50% that had contributed 90.9% did so in terms of time for

beach and community clean-up operations and school and community educational programs. Thus, it is reasonable to surmise that small businesses dependent on ecotourism were unaccustomed to providing direct monetary contributions to environmental causes.

The majority of the respondents indicated that they were sole owners or partners of their respective companies (85.8%). Approximately 50% of the partnerships were husband/wife teams. Some 14.2% of the businesses were corporations. The educational level ranged from high school to Ph.D. with 53.5% of the respondents indicating a graduate school, college, or technical/vocational education level. However, the correlation between education and size of business (0.20) was not high. All respondents were owner/managers or hired managers of the company. Some 35.7% of the respondents were hired managers.

The Model

A Tobit model with two continuous independent variables and nine dummy variables was used to estimate WTP for the maintenance of ecotourism sites. A Tobit model was used because several responses for WTP were at the lower bound of zero. Definitions and simple statistics for the variables included in the model are presented in Table 3. The vector of explanatory variables was the result of survey responses. The model results are shown in Table 4.

Gross Annual Revenue (GAR) was included in the model as an indicator of size. Size was expected to be positively related to WTP, as larger firms should have higher levels of producer surplus than smaller firms. However, the coefficient for GAR was negative and significant. The implications of this are discussed later.

Level of education (EDUCATE) was included in the model because education was expected to directly reflect a knowledge and understanding of the importance of properly

maintaining ecotourism sites and, thus, WTP. The coefficient for EDUCATE, indeed, was positive and significant, Table 4.

Business classification was included in the model because it was expected that different types of businesses would have differing responses to WTP. The different types of businesses were represented in the model via dummy variables, one each for wilderness retreat/nature sanctuary (WRNS), marine resort (MR), tour operation (TOUR), and art galleries/craft boutiques (ART), while the hotel/guest house type of business is reflected in the intercept. With the hotel/guest house type of business as the benchmark, the model coefficients indicate a greater willingness to pay by tour operators (TOUR), but much less willingness to pay by marine resorts (MR), wilderness retreats/nature sanctuaries (WRNS), and art galleries/craft boutiques (ART). The coefficients for WRNS and ART were significant, Table 4.

Four environmental policy dummy variables were included in the model: membership in environmental/ecological organizations (MEMBER), contribution to environmental causes (TRIBUTE), favor converting ecotourism sites into developed recreational areas (CONVERT), and favor restricted use of ecotourism sites (RESTRICT). It was expected that MEMBER, TRIBUTE, and RESTRICT would be positively related to WTP as all three are pro-environmental indicators. However, in actuality, only the coefficient for TRIBUTE was positive. The coefficients for the MEMBER and RESTRICT policy variables were negative though the coefficient for RESTRICT was not significant. In general, respondents felt that their actions or positions on the matter were sufficient. They saw their involvement in the environmental cause as a proxy for willingness to pay. The negative coefficient for

CONVERT was as expected and significant, Table 4. Clearly, there is no pressing need to maintain a natural site if it is to be converted into a recreational area.

Nationality of ownership of the businesses directly dependent on ecotourism was thought to be important in WTP. Thus, a dummy variable (CARIB) was included in the model indicating whether the business was 100% Caribbean owned or not. It was expected that 100% Caribbean owned businesses would be more willing to pay than owners with foreign influence as this would be seen as securing a future asset for future generations. The coefficient for CARIB was indeed positive and significant, Table 4.

DISCUSSION AND IMPLICATIONS

In order for businesses directly tied to ecotourism in the Windward Islands to be in the best possible position relative to other local, regional, and international tourism businesses, there must be an awareness of the actions of competitors, the international ecotourism market, and the environmentally friendly strategies that make economic sense. Shunduch (1996) indicates that affluent ecotourists are interested foremost in natural settings followed by activities. The overall experience for ecotourists is much more important than accommodations, and as ecotourists are becoming more aware of environmental issues, they are beginning to differentiate among businesses employing environmentally sensitive strategies. Shunduch (1996) quotes a study by the Travel and Industry Association of America, which indicated that ecotourists are willing to pay an 8.5% premium to stay in what they perceive to be an environmentally sensitive property. Businesses directly dependent on ecotourism in the Windward Islands can perhaps achieve competitive advantage through actions that lower operating costs or through product differentiation. Shunduch (1996) cites

many such examples. However, firm operators must first understand and appreciate the value of environmental amenities and services, followed by their contribution to the economic success of the business.

The following profile for a firm's WTP for environmental amenities and services was drawn from this study: smaller businesses with highly educated persons in management who are in direct contact with ecotourism sites, have previously contributed to environmental causes but are not members of environmental/ecological organizations, and fully Caribbean owned. Firms that are members of environmental organizations consider these activities as proxies for WTP and therefore sufficient.

A rather interesting finding of the study was that GAR, gross annual revenue, was negatively related to WTP. It was expected that large firms (high gross annual revenue) would be more willing to lower risk by contributing to the maintenance of "ecotourism products." The results show that smaller businesses were willing to pay more than larger ones. These findings indicate that managers of smaller businesses, who are also the direct field operators, are able to see firsthand and more fully understand the implications of site congestion and site degradation. The results also provide support for one of the basic concepts of ecotourism -- the development of local enterprises that are more environmentally friendly (Honey 1999).

Government policy-makers and industry officials within the Windward Islands can benefit from these findings by targeting larger businesses for training and environmental awareness programs, which by virtue of size accommodate greater numbers of tourists and thus have a greater effect on the environment. Businesses that do not directly use ecotourism sites should also be included in the above programs, thereby emphasizing the linkages

between other economic sectors/sub-sectors. Government policymakers and tourist officials should also find a way to work with non-governmental environmental organizations in an effort to use all contributions (monetary or otherwise) effectively for optimal management of ecotourism sites. Special emphasis should be placed on the economic benefits to be gained in the long run from employing environmentally sensitive strategies.

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TABLE 1
PERCENTAGE CONTRIBUTION OF KEY SECTORS TO GDP, OECS

Country	Total GDP	GDP Growth Rate	Agriculture to GDP	Manufacturing to GDP	Tourism to GDP
	mil. dollars	%	%	%	%
Antigua & Barbuda	580	5.0	4.1	2.2	13.3
St. Kitts & Nevis	272	7.0	5.1	10.1	NA ^a
Dominica	243	2.1	20.9	7.5	2.7
St. Lucia	581	1.8	8.6	6.6	12.4
St. Vincent & The Grenadines	294	3.7	10.1	6.6	2.0
Grenada	316	6.8	8.1	6.8	7.9
Barbados	1047	3.0	6.6	9.7	14.7

^aNot available.

Source: IMF Staff Reports (2000), World Bank Country Data (2000).

Note: Data are not available for Monsterrat and the Bahamas. GDP in 1997 U.S. dollars.

TABLE 2
TOURISM TRAVEL IN THE WINDWARD ISLANDS, 1996

Country	Visitor Expenditures Per Capita	Estimates of Visitor Expenditures	Tourist Stop-over Arrivals	Rooms in Tourism Accommodations	Room Occupancy Rate
	U.S. mil. dollars	U.S. mil. dollars	U.S. mil. dollars		%
Dominica	488	36.6	63.3	764	NA ^a
St. Lucia	1,824	221.0 ^b	235.7	3'986	66.6
St. Vincent	577	64.0	55.0 ^b	1,251	NA ^a
Grenada	609	60.2	108.2	1,669	59.3

^aNot available.

^b1994.

Source: OAS Inter-Sectoral Unit for Tourism, 1999.

TABLE 3
DEFINITIONS AND DESCRIPTIVE STATISTICS OF VARIABLES
INCLUDED IN THE MODEL

Variable	Definition	Mean	Std. Dev.	Min	Max.
WTP	Willingness-to-pay per year for maintenance of ecotourism sites, EC dollars ^a (dependent variable)	177.04	321.49	0	1,200
GAR	Gross annual revenue (in thousands of EC dollars)	136.48	95.41	15	250
EDUCATE	Years of education	14.67	3.14	12	20
Business Type ^b					
WRNS	Wilderness retreat/nature sanctuary =1, 0 otherwise	0.26	0.45	0	1
MR	Marine resort = 1, 0 otherwise	0.07	0.27	0	1
TOUR	Tour operation =1, 0 otherwise	0.19	0.40	0	1
ART	Art galleries/craft boutiques = 1, 0 otherwise	0.19	0.40	0	1
Environmental Policies					
MEMBER	Membership in environmental/ecological organization = 1, 0 otherwise	0.33	0.48	0	1
TRIBUTE	Contribution to environmental causes = 1, 0 otherwise	0.52	0.51	0	1
CONVERT	Favor conversion of natural areas into developed areas = 1, 0 otherwise	0.52	0.51	0	1
RESTRICT	Favor restricted use of site = 1, 0 otherwise	0.93	0.27	0	1
CARIB	100% Caribbean owned = 1, 0 otherwise	0.74	0.45	0	1

^aThe average exchange rate over the survey period was EC \$2.71/US dollar (IMF 2000).

^bThe hotel/guesthouse type of business is represented in the intercept.

TABLE 4
TOBIT MODEL RESULTS

Variable	Coefficient	Standard Error	b/St.Er.	P[Z >z]
GAR	-3.62	1.44	-2.52	0.01
EDUCATE	145.54	37.51	3.88	0.00
WRNS	-1,066.22	354.56	-3.01	0.00
MR	-2,432.19	58,980.45	-0.04	0.97
TOUR	13.58	316.25	0.04	0.97
ART	-1,181.27	317.34	-3.72	0.00
MEMBER	-610.79	227.62	-2.68	0.01
TRIBUTE	526.09	241.48	2.18	0.03
CONVERT	-1,384.91	339.13	-4.08	0.00
RESTRICT	-62.55	276.82	-0.23	0.82
CARIB	1,172.60	367.36	3.19	0.00
Intercept	-1,541.62	538.97	-2.86	0.00
Pseudo R ²		0.49		
Degrees of Freedom		15		
N		28		