Journal of Modern Accounting and Auditing, ISSN 1548-6583
January 2013, Vol. 9, No. 1, 144-152

Ecotourism Potentials for Financing Parks and Protected Areas: A Perspective From Iran's Parks

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Ecotourism has been considered as the impetus and economic investment for management of natural resources. The current research uses data mining from the recreation values of Iran's parks and separating influential factors on visitors' willingness to pay (WTP). This study delves into the main findings of 31 researches applied to assess the recreation value of 33 different parks across Iran from 2004 to 2011. Those researches collected 9,216 questionnaires in total. It was conducted using R software and Rattle user interface to analyze gathered data and information. Results showed that 69% of respondents were male. The averages of age and academic years were 34.4 and 13.7 respectively. The majority of the visitors were willing to pay money to visit the parks. Variables of education levels, household size, marital status, age, and bid amount had an effect on visitors' rate of WTP for visiting, and variables of gender, education levels, and marital status affected the general amount of WTP. The average amount of WTP per person was estimated at US $1.4, and the average annual recreation value for each hectare of parks was calculated at US $2,313. This study provides justification for the decision to support the quality of Iran's parks.

Keywords: Iran, park, recreation value, willingness to pay (WTP)

Introduction

Tourism and recreation will increasingly use parks and other natural areas "in developed countries as buffer zones from daily urban life and in developing countries as the setting for nature tourism" (Font & Tribe, 1999, p. 2). Accordingly, recreational planning as well as applying various environmental projects and developing diverse recreational and leisure centers for people is an important issue at the macro and regional levels of management in every country.

Environmental resources in today's world are considered as valuable assets, the protection of which should be the fundamental human efforts. Whereas economic considerations generally play a key role in decisions, economic valuation of ecosystem services has attracted special attention in recent years. In fact, the idea of economic valuation of environmental benefits of parks and recreation areas has been considered since 1947 (Majnonian, 1995). Many efforts have been conducted to determine the benefits of visitors who visit recreation

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areas of forest and national parks (Amirnejad & Khalilian, 2006). In the last three decades, a range of economic valuation methods for ecosystem services have been developed to determine their values via people's preferences as expressed by willingness to pay (WTP; Hein, 2007). Such activities are an important part of benefit-cost analysis in parks' management plans (Amirnejad, Khalilian, & Assareh, 2006). Hein and Groot (2007) supposed that:

> Economic valuation of environmental benefits can contribute to a more sustainable and a more efficient decision-making. Analysis and valuation of ecosystem services can also guide the setting up of mechanisms to compensate the suppliers of ecosystem services for the costs related to providing those benefits in a payment for ecosystem services mechanism. (p. 106)

Parks, protected areas, and other natural areas in Iran and across the world are considered as special places that have been regarded as natural and cultural assets attracting many local, national, and international tourists (Mahdi, Sakai, Moriya, & Majid, 2012; Darvishsefat, 2006; Moore, Crilley, Darcy, Griffin, Taplin, Tonge, Wegner, & Smith, 2009). Parks are parts of cities or the countrysides where visitors can enjoy themselves, but little tourist revenue reaches park management, despite the fact that this revenue is much needed.

Review studies in Iran show that there are few studies on the estimation of recreation value of parks. For management of parks' assets to be effective and successful, it is necessary to obtain information about visitors' characteristics as well as their opinions. Ecotourism, as nature-based tourism with its special characteristics, is also considered as the impetus and economic investment for management of natural resources. To promote proper planning in this field, the current research uses data mining from the recreation values of Iran's parks, rate of WTP, amount of WTP, and separating influential factors on visitors' rate of WTP and amount. This knowledge then allows managers to manage parks accordingly. It can be effective in foreseeing the needs, eliminating the shortages, and developing the tourism in the parks.

Method

Study Areas and Data Collection

Due to the extent of Iran, there are a lot of valuable parks across the country. The authors gathered data and information of 31 researches that were applied to assess the recreation value of 33 different parks across Iran from 2004 to 2011. The data come from the findings of Amirnejad, Ataiy Solut, and Mahjuri (2009), Abedinzadeh (2004), Amirnejad and Rafiei (2009), Amirnejad et al. (2006), Amirnejad and Khalilian (2004; 2006), Daneshvar and Monfared (2010), Dashti and Sohrabi (2009), Emami and Qazi (2008), Fallah, Mosavipour, Najafi, Abtahi, and Mokhdoum (2009), Fazli (2004), Goshtasb, Bahman, and Khavar (2009), Amirnejad (2007), Hashemzadeh, Feizi, and Seddigh (2011), Hayati, Salehnia, Hossenzad, and Dashti (2010), Khaksar, Daneshvar, Arabi, and Akbari (2011), Mohammad and Monavari (2005), Molaei, Sharzehei, and Yazdani (2010), Monfared (2010), Nakhaei, Mortazavi, Amirnejad, and Navazi (2010), Piri, Mozafari, and Javdan (2010), Pishkar (2006), Qorbani and Sadeghi (2011), T. Rosta, H. Rosta, and Keshavarz (2008), Sariesmaeili and Latifioskoei (2006), Shamsi, Saeed, Sobhani, Darvishsefat, and Faraji-Dana (2008), Tavakoli (2009), Naji, Baniasadi, Saleh, and Rafiee (2011), and Hayati, Ehsani, Ghahremanzadeh, Raheli, and Taghizadeh (2010). Those researches, which covered almost one million hectare of most important parks of Iran, collected 9,216 questionnaires in total. The questionnaires were about social and economic characteristics of visitors (sex, marital status, academic level, job, age, visitor income per month, and income of family per

month), their opinions about those parks (e.g., amount of facilities), their rates and amounts of WTP, etc..

Data Analysis and Regression Model

The analysis was conducted using R software and Rattle user interface to analyze gathered data and information. Linear interpolation method was used to cover missing values (Microwaves, 2012). To delve into the relationships, data were normalized by rescaling between zero and one. It was done by dividing the amount of every variable by the maximum amount of that variable. Visitors' ages were grouped into three levels: "aged less than 20", "aged between 20 and 40", and "aged more than 40". Their jobs were arranged in six sections, namely, "employees" (who work at governmental offices), "businessmen/businesswomen" (who have private jobs), "students", "housekeepers", "other jobs" (e.g., retired), and "the unemployed". Depend on the year, the amount of visitors' incomes was exchanged to US dollars (Farsinet, 2012) and classified into three classes, including "income less than US $155", "income between US $155 and US $388", and "income more than US $388". The observations of the rate of WTP were categorized within two groups. For the group of observations with the rate of WTP lower than the average rate of WTP, it is named "low". For the group of observations with the rate of WTP equals or greater than the average rate of WTP, it is named "high". This categorizing was also done for annual value of each hectare of parks, meaning the total paid amount of WTP (as entrance fee) per hectare per year by all visitors. Subsequently, two new groups for annual value of each hectare were named "high" (equals or greater than the average annual value of each hectare of parks) and "low" (lower than the average annual value of each hectare of parks). By splitting these variables, the authors have made an improvement in the homogeneity of values of the target variables. It also allows the authors to observe different distributions of target variables in each group.

The authors used the multiple linear regression model to model the relationship of the rate of WTP and amount of WTP separately to the independent variables. An explanation of all variables included in the models is provided in Table 1. The authors hypothesize that respondents who are older, who are male, who are single, who have smaller household size, who have higher levels of education, who derive more satisfaction from their ecotourism experiences, and who have high income would have a higher rate and amount of WTP than others.

Table 1

A Summary of Variables (Average in Each Study) Used in the Multiple Linear Regression Model

Variable	Description
Age	Respondents' ages
Gender	Percentage of each gender (binary scale: males = +1 and females = -1)
Marital	Percentage of each status (binary scale: married = +1 and single = - 1)
Household size	Total number of people living in respondents' households
Education	Respondents' education years
Service satisfaction	Satisfaction percentage of the parks' services
Income	Respondents' monthly income
Bid amount	The maximum amount of payment
Rate of WTP	Percentage of rate of WTP of each park

Results

Graphical overviews of how the observations of variables distributed are presented in Figures 1 and 2, according to the categorized rate of WTP and annual value of each hectare. Much about the relationships

between the input variables and the target variables can been seen. The width of each plot also indicates the distribution of the values of the target variables. In this instance, the median of the values associated with the observations, for which it has high WTP and annual value of each hectare, is significantly different (at the 95% level of confidence) from the median of those observations for which it has low WTP and annual value of each hectare.

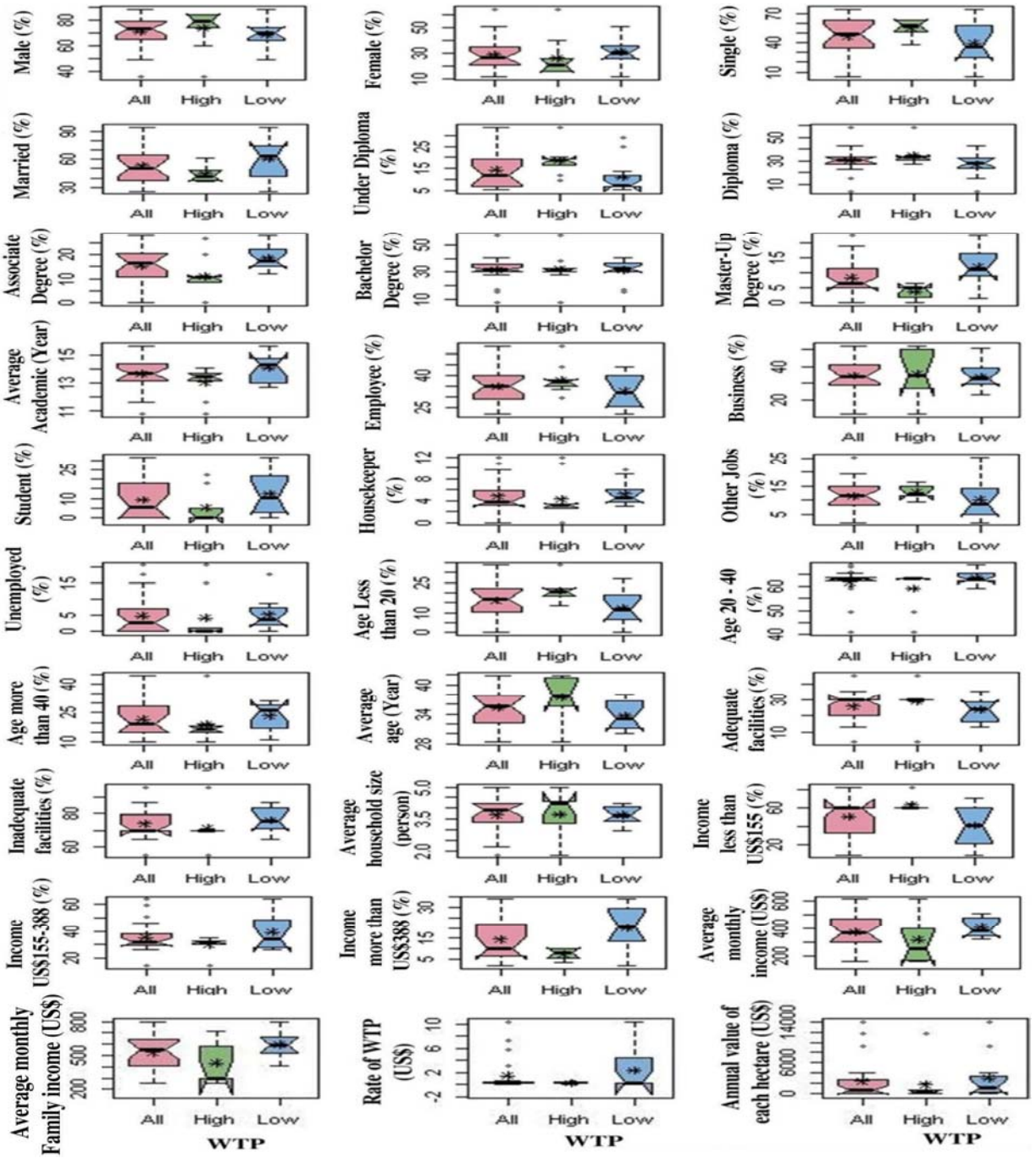

Figure 1. Distribution of variables according to categorized WTP. Source: Williams (2011).

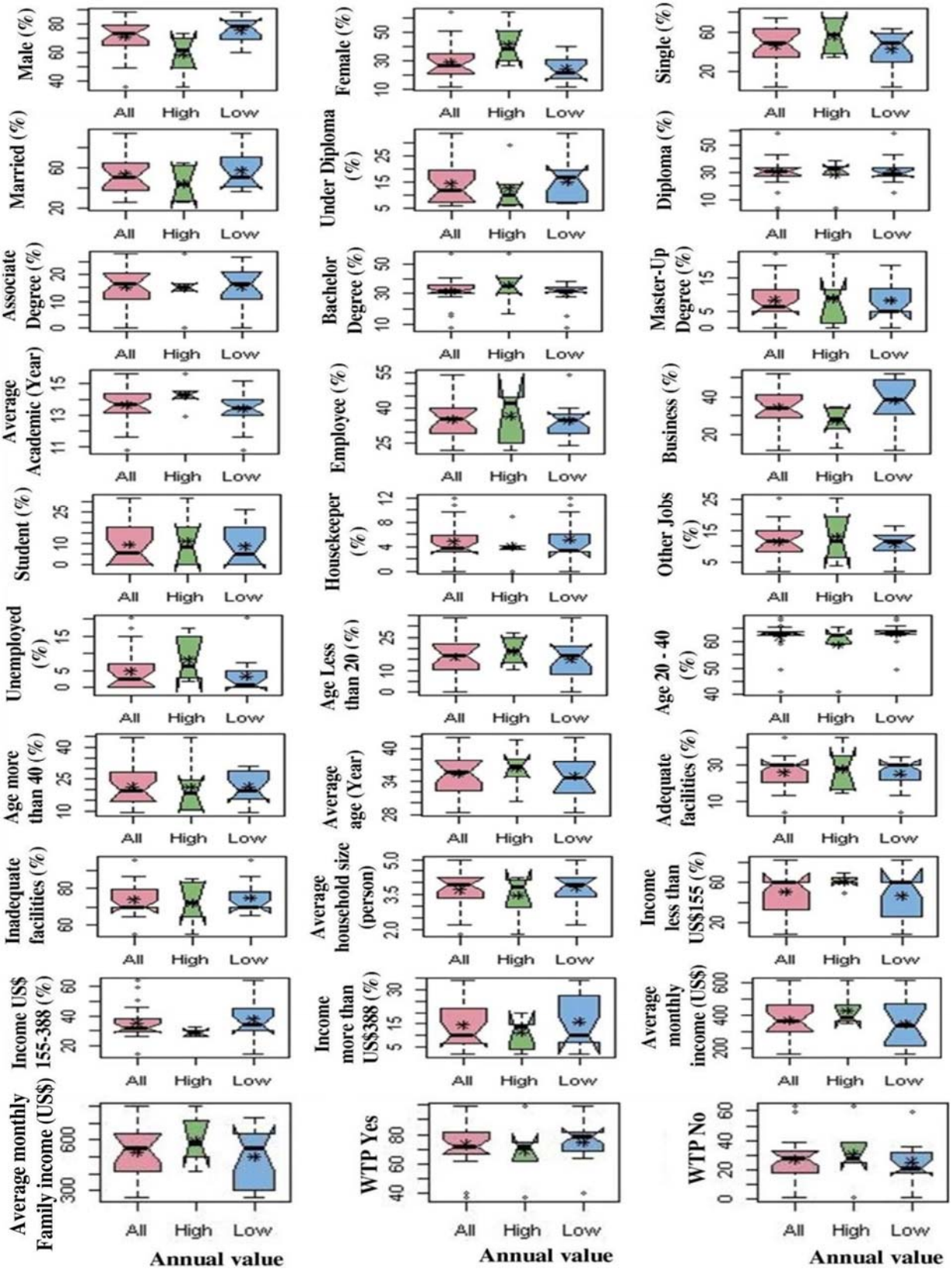

Figure 2. Distribution of variables according to categorized variable of "annual value of each hectare" of parks.

The model of multiple linear regression shows relationships of rate of WTP with other independent variables, as shown in Table 2. Of the eight variables, five were significant predictors of rate of WTP in the model, namely, the education level, household size, marital status, age, and bid amount. The negative signs of marital status, bid amount, and household size indicated that the greater percentage of married people, the higher the bid amount or that the greater the household size, the lower the probability of the rate of WTP. Meanwhile, older age and higher levels of education led to higher probabilities of rate of WTP. Variables of gender, service satisfaction, and income did not explain significant variations in rate of WTP. Their predictive abilities were overpowered by the other variables in this study.

Table 2

Multiple Linear Regression Model on Rate of WTP

Explanatory variable	Coefficient	Std. error	*t*-value	Pr. (> |*t*|)
Gender	0.26661	0.25635	1.040	0.3096
Marital	-0.44577	0.17697	-2.519	0.0195*
Education	0.86418	0.37154	2.326	0.0296*
Age	0.70320	0.25775	2.728	0.0123*
Service satisfaction	0.19381	0.25084	0.773	0.4480
Household size	-0.63380	0.24754	-2.560	0.0178*
Income	0.04495	0.16342	0.275	0.7858
Bid amount	-0.28001	0.12786	-2.190	0.0394*
Intercept	-0.11380	0.59036	-0.193	0.8489

Notes. (1) Multiple *R*-squared: 0.6174; (2) Adjusted *R*-squared: 0.4783; and (3) * indicates that the values highlight significant statistical results.

Table 3

Multiple Linear Regression Model on Amount of WTP

Explanatory variable	Coefficient	Std. error	*t*-value	Pr. (> |*t*|)
Gender	-0.7168	0.3412	-2.101	0.0463*
Marital	-0.6190	0.2519	-2.457	0.0216*
Education	1.0377	0.3849	2.696	0.0126*
Age	0.1938	0.3166	0.612	0.5461
Service satisfaction	0.1366	0.3946	0.346	0.7322
Household size	-0.3392	0.3507	-0.967	0.3431
Income	0.2199	0.2405	0.915	0.3695

Notes. (1) Multiple *R*-squared: 0.6649; (2) Adjusted *R*-squared: 0.5672; and (3) * indicates that the values highlight significant statistical results.

The model of multiple linear regression on amount of WTP shows its relationships with other independent variables in Table 3. Of the seven variables, three were significant predictors of amount of WTP in the model, namely, gender, marital status, and the education level. The negative signs of gender and marital status indicated that the greater percentage of male or the greater percentage of married people, the lower the probability of the amount of WTP. Meanwhile, higher levels of education led to higher probabilities of amount of WTP. The signs of coefficients of household size, age, service satisfaction, and income were as expected, though these variables did not explain significant variations in amount of WTP. Although respondents who were older and had high monthly incomes, low household size, and more satisfaction were more likely to pay more, their predictive abilities were overpowered by the other variables in this study.

Other findings show that the cooperation of married women to answer questionnaires, when there is

another family member, is less (17%) than that of those who had the roles of “husband” (39%) or “offspring” (44%) in the family. Respondents much preferred to visit parks with their “families” (47%) or “friends” (41%) on “Fridays” (65%) and “Thursdays” (20%, considering that Iran’s weekend is Friday) in “summer” (43%) or “spring” (23%).

In total, results from the comparison of case studies together show that the parks have different rates of and amounts of WTP based on their important biodiversity, locating in big cities with nature-based designs, and satisfactory facilities.

Discussion and Conclusions

Growing population, changing patterns of settlement, environmental pollution of cities, and more needs for leisure have increased the importance of recreation places. Meanwhile, lack of financial resources to create or form recreational places, e.g., parks, has been conducted by the management of parks to evaluate the economic values of parks. In recent years, payment for park services has emerged as an innovative option to provide incentives for sustainable park management (Hein, 2007). Valuation park services, based on people’s preferences (Kumar, Verma, Wood, & Negandhi, 2010), can be useful to regulate the transfer of payments from beneficiaries to providers in return for maintaining the supply of the park services.

This study delves into the main findings of 31 researches applied to assess the recreation value of 33 different parks across Iran from 2004 to 2011. It was conducted to estimate people’s rate of WTP, amount of WTP (entrance fee), annual recreation value of each hectare of Iran’s parks, and influencing factors on rate and amount of WTP.

Findings showed that 69% of respondents were male and 54% were married. The mean of household size was 3.74. The averages of age and academic years were 34.4 and 13.7 respectively. Sixteen percent of respondents were less than 20 years old, 62% were between 20 and 40 years old, and 22% were more than 40 years old. The information provided indicates the academic levels of the respondents: under high school (14%), high school (31%), associate degree (14%), bachelor degree (32%), and master or upper degrees (9%). Of the respondents, 35% were employees, 33% were businessmen/businesswomen, 9% were students, 6% were housekeepers, 12% had other jobs (e.g., retired), and 5% were unemployed. Respondents much preferred to visit parks with their families (47%) or friends (41%) on Fridays (65%) and Thursdays (20%, considering that in Iran, the weekends are Thursday and Friday) in summer (43%) and spring (23%). Of the respondents, 71% believed that parks’ facilities were inadequate. Besides, 56% of the respondents had less than US $155 monthly income, 33% between US $155 and US $388, and 11% more than US$ 388. Although Iran is a developing country with low income, the average respondents’ monthly income and their families’ monthly income were US $403 and US $539 respectively, 73% of the visitors were willing to pay money to visit the parks, which 77% of respondents were willing to pay money less than US$ 1 as entrance fee for parks. Conversely, 23% were willing to pay money more than US $1 to US $10.35 (see Figures 1 and 2). Variables of education levels, household size, marital status, age, and bid amount had an effect on visitors’ rate of WTP for visiting, and variables of gender, education level, and marital status affected the general amount of WTP (see Figures 1 and 2 and Tables 2 and 3). The average amount of WTP per person as entrance fee was estimated at US $1.4, and the average annual recreation value for each hectare of parks was calculated at US $2,313.

The set-up of new payment schemes for economic services is one of the sensitive issues, since these “schemes are unlikely to be successful if local beneficiaries are poor and have no funds available to pay for the

ecosystem services they receive" (Hein, 2007, p. 6). On the other hand, the contingent valuation method (CVM) is the only valuation method to quantify the values of non-use ecosystem in monetary terms (Hein, 2007). In the last decade, CVM studies have been widely applied in Iran (Khaksar et al., 2011). It is needed to collect the information of economic values of the ecosystem with well-designed CVMs to use in legal cases to determine the amount of compensation after any destroyed activity in an ecosystem.

The results show that Iran's parks have considerable entertainment value. This study can support parks' policy making and implementation in various ways. It increases the awareness of stakeholders and decision makers of the economic benefits resulted from sustainable park management. It also provides justification for the decision to support the quality of the parks.

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