Iranian Economic Review, Vol.12, No.18, Winter 2007

Price and Expenditure Elasticities of Demand for Domestic Tourism in Iran: The Case of Hamedan Province[1]

Javad Mir-Mohammad Sadeghi*
Seyed Komail Tayebi**
Mohammad Jamshidi***

Abstract

Domestic tourism has an important role in socio-economic development in several ways including creating jobs and improving income distribution. Although several researches have been done on tourism demand, a small proportion of them have been on domestic tourism. In this paper, the price and expenditure elasticities of the household demand for domestic tourism in Iran, focusing on the case of Hamedan Province, are estimated by the Almost Ideal Demand System (AIDS) model. The data set used is of a cross-section type and has been collected from Hamedan tourists regarding their domestic trips. This data set includes 504 domestic tourist households that their trips last at least one overnight in Hamedan province in summer of 2003. The expenditure elasticity results for food, accommodation, transportation, visit fees (entrance fees to enter the points of interest), and souvenirs commodity groups are estimated by about 1.34, 1.32, 1.47, 0.36 and 0.47, respectively, and for total trip to provinces were close to one. The price elasticities of demand for the five commodity groups and for total trips to provinces are less than one. This implies that an increase in the total budget of the household yearly trips would be allocated by a smaller proportion to Hamedan trip as compared to other provinces. Another implication is that an increase in the price of visit fees, for example, can increase the total receipts to compensate the high costs of repair and maintenance of the valuable points of interest.

Keywords: Domestic Tourism, Import Demand, Cross-section Data, AIDS, Hamedan Province.

1- The earlier draft of this paper was presented (as a Background paper) at the Economic Research Forum 11th Annual Conference 14-16 December, 2004, Beirut, in which the paper received the Best Policy Paper Award.

* - Corresponding Author, Professor of Agricultural Economics, Department of Rural Development, College of Agriculture, Isfahan University of Technology, E-mail: sadeghi@cc.iut.ac.ir.

**- Assistant Professor of Economic Department, Faculty of Administrative Sciences and Economics, University of Isfahan, E-email: komail@econ.ui.ac.ir.

***- Former graduate student, Department of Rural Development, College of Agriculture, Isfahan University of Technology.

1- Introduction

Domestic tourism[1] has an important role in socio-economic development in several ways including creating jobs and improving income distribution. Although several researches have been done on tourism demand, a small proportion of them have been on domestic tourism. Few researches have been carried out on the domestic tourism in other countries have used cross-section data to analyze the demand: for example, on Turkey, Alpay and Koc (2002); on Spain, Sampol and Perez (2000); and on Sweden, Coenen and van Eekeren (2003). In Iran, few researches have been done on international tourism using time series data (Moraseli, 1996; Noori, 1996; Kaveian, 2002; and Habibi, 2002). On the domestic tourism in Iran, however, the researches are quite limited. Bound

The purpose of the present research is to estimate the price and expenditure elasticities of demand for the household domestic tourism in Iran using cross-section data and the Almost Ideal Demand System (AIDS) model. The data set used is of a cross-section type and has been collected from Hamedan tourists regarding their domestic trips. This data set includes 504 domestic tourist households that their trips last at least one overnight in Hamedan province in summer of 2003.[2]

1- In terms of the direction of traveling, tourism can be classified into three types of inbond, outbond, and domestic. Inbond tourism refers to travel of people from outside into the region (country), outbond tourism refers to travel of people from inside to out of a region (country), and domestic tourism refers to travel of people from a point to another point of a region (country). In either of the tourism types, the tourist should stay one overnight in the destination. Furthermore, in some documents, international tourism refers to inbond, outbond or both types. In Key Note Ltd (2001, p. 5), types of tourism are defined as follows: "There are three definable tourism markets for any country, based on the internal, inward and outward flows of travelers, who are defined as tourists when they spend at least one night away from home." Key Note Ltd also referred to the types of tourism as: domestic tourism, tourism abroad and incoming tourism.

2- The readers of this article should be aware of the shortcomings of the results due to first, the use of cross-section data and hence, not taking into account the factors affecting the demand overtime, such as changes in income and tastes. Second, our data is facing some sample selectivity bias since we have confined our sample to only summer tourists (this shortcoming might not be serious, since according to sample data, 97 percent of the tourists preferred to travel in summer to Hamedan) and the sample was also confined to those who have made the trip. So, those who might have taken trip to Hamedan were left out.

To the authors' knowledge, in none of the previous researches in Iran, domestic tourism demand has been analyzed by using AIDS or other econometric models. AIDS model has been offered by Deaton and Muellbauer (1980) and Deaton (1988). It has been used to estimate the demand for tourism (Alpay and Koc, 2002; Sampol and Perez, 2002; and Coenen and van Eekeren, 2003) and for the other commodities such as food and beverages (Richertsen, 1998) and Dairy products (Heien and Wessells, 1988). More discussion on AIDS model and its use for estimating expenditure and price elasticities can be seen in Asche and Wessells (1997), Buse (1994), and Green and Alston (1990).

Domestic tourism, at least in terms of the number of tourists, constitutes a considerably large part of total tourism in Iran and in the other Middle East and North African (MENA) countries[1]. Improvements in knowledge on the price and expenditure elasticities of demand for domestic tourism would help in making better policy decisions for this industry. Basically, Section 2 will refer to methodology and data while Section 3 analyzes estimated results obtained by using AIDS model. Finally, concluding remarks will be provided by Section 4.

2- Methodology and Data

2-1- Methodology: An AIDS Specification

In much of the recent literature on systems of demand tions, the starting point has been the specification of a function which is general enough to act

1- While information for the magnitude of domestic tourism, as compared to international tourism in Iran is almost unavailable, this information on the province or lower levels is reachable. In Hamedan province, that is the fourth largest tourist province of Iran, for example, from its 2,695,150 tourists in 1998, 98.2 percent were domestic, leaving 1.8 percent for its international part (Interviews of the second author with the authorities of Hamedan Tourist Organization in 2003 on the data for 1989 to 1995 of Hamedan tourism.). In developed countries as well, number of domestic tourism can be larger than the other two types, although in terms of value might not. In Key Note Ltd (2001, p. 5) the volume of the trips in UK in 2000 was reported as 132 million for domestic tourism, 56.5 for tourism abroad, and 25.3 for incoming tourism. As a piece of information on Iran inbond tourism: Iran has been the third fastest growing developing country in terms of international arrivals between1990 and 2000; during this time period, the number of her arrivals increased from 154,000 to 1,700,000 (PPT, 2004).

as a second-order approximation to any arbitrary direct or indirect utility functions or cost functions. Alternatively, it is possible to use a first-order approximation to the demand functions themselves as in the Rotterdam model. Following these approaches, Deaton and Muellbauer (1980) start from a specific class of preferences, which are represented via the cost or expenditure function. This function defines the minimum expenditure necessary to attain a specific utility level at the given prices. In principle, a mathematical work done by Deaton and Muellbauer (1980), who denote the function c(u, p) for utility u and price vector p, specifies an AIDS cost function as

$$\text{Logc}(u,p) = \alpha_0 + \sum_{k=1}^{n} \alpha_k \text{Logp}_k + \frac{1}{2}\sum_{k=1}^{n}\sum_{j=1}^{n} \gamma_{kj} \text{Logp}_k \text{Logp}_j + u\beta_0 \prod_{k=1}^{n} p_k^{\beta_k} \qquad (1)$$

where α_i, β_i, and γ_{ij} are parameters. The demand functions, thus, can be derived directly from tion (1). It is a basic property of the cost function that its price derivatives are the quantities demanded: $\partial c(u,p)/\partial p_i = q_i$. Multiplying both sides by $\text{Log}[p_i/(u,p)]$, we find $\partial \text{Log}\, c(u,p)/\partial \text{Log}\, p_i = p_i q_i / c(u,p) = w_i$, where w_i is the budget share of good i.

Hence, logarithmic differentiation of (1) gives the budget share as a function of prices and utility, which can be related to demand for tourism. For a utility maximizing consumer, total expenditure on a trip x is l to c(u, p) and this lity can be inverted to give u as a function of p and x, the indirect utility function. If we do this for (1), we have budget shares on tourism (w_i) as a function of p and x; these are the AIDS demand functions in budget share form:

$$w_i = \alpha_i + \sum_{j=1}^{n} \gamma_{ij} \text{Logp}_j + \beta_i \text{Log}\frac{x}{p}, \qquad (2)$$

where p_j is the price of good *j* in conjunction with a trip, *x* is total expenditure and p is a price index and its logarithm is defined by

$$\text{Logp} = \alpha_0 + \sum_{k=1}^{n} \alpha_k \text{Logp}_k + \frac{1}{2}\sum_{k=1}^{n}\sum_{j=1}^{n} \gamma_{kj} \text{Logp}_k \text{Logp}_j$$

Using the price index from tion (3) often raises empirical difficulties and it is common to use, instead of p, Stone's (geometric) price index (p*) that is defined by Green and Alston (1990)[1]:

$$\text{Log}p^{*} = \sum_{i} w_i \text{Log}p_i$$

The restrictions on parameters of tion (1) imply restrictions on the parameters of the AIDS tion (2). We take these in three sets:

$$\sum_{i=1}^{n} \alpha_i = 1 \,,\; \sum_{i=1}^{n} \gamma_{ij} = 0 \,,\; \text{and} \sum_{i=1}^{n} \beta_i = 0$$

$$\sum_{j} \gamma_{ij} = 0$$

$$\gamma_{ij} = \gamma_{ji}$$

The conditions (5) are the *adding-up* restrictions; as can be checked from (2), these ensure that $\Sigma w_i = 1$. *Homogeneity* of the demand functions requires restriction (6), while Slutsky *symmetry* is satisfied by tion (2) if and only if the symmetry restriction (7) holds.

In this research the trip expenditures are used as an indicator for tourism demand. Hence, an econometric specification of the AIDS model for each household as given in tion (2) is used to estimate the demand model[2]:

$$w_i = \alpha_i + \sum_{j=1}^{n} \gamma_{ij} \text{Log}p_j + \beta_i \text{Log}\frac{x}{p} + e_i \quad i = 1, \ldots, n,\; j = 1, \ldots, n \qquad (8)$$

1- For elaboration on the possibility of using Stone's price index (p*) instead of p see Asche and Wessells (1997).

2- tion (8) is estimated for the five commodities and services of food, accommodation, transportation, visiting the points of interest, and souvenirs in the trip to Hamedan province. This tion is also estimated for the aggregate demand (some of five goods) in the trip to the Hamedan province, and for the total trips to all other provinces of the country.

where w_i is the expenditure (budget) share allocated to good i, x is the total relevant trip expenditure (including all goods)[1], p_j is the price of good j, and e_i is the disturbance term including unexplained factors in the tion. Expenditure elasticities [η_i =1+ (β_i / w_i)] and own price elasticities [ε_{ii} = -1 + (γ_{ij} / w_i) - β_i] can be obtained for the AIDS model.[2]

The proxies of the model are calculated as follows: For each of the food, accommodation, and transportation, the price is valued in terms of the ratio of household expenditures per day by the number of the household numbers; that is, the expenditure per person per day. For visit fees, and souvenirs, the expenditure of each good is divided by the number of the household members, that is, the per capita expenditure per person. For the latter two types of commodities, it is assumed that the household would allocate a specified amount of money to spend on visiting the points of interest and to buy souvenirs regardless of the number of the trip days. But for the former three commodities, it is assumed that the increase in the number of the trip days would proportionately increase their expenditures. When demand tions for the whole trip to Hamedan, and for the whole trips to all other provinces (in year 2003) are estimated, the price proxy is calculated as the expenditure per household per day. To justify this, we follow Soori and Mashayekh-Ahangarani (1998) who calculated a set of consumption expenditures for 443 Iranian households for a period of four years (1992-1995), indicating roughly a fixed trend for such commodity groups like food, accommodation, transportation and communications.

The data set used in this research, thus, was of a cross-section type and have been collected from Hamedan tourists regarding their domestic trips. This data set includes 504 domestic tourist households that their trips last at

1- When the demand tion (8) for aggregated goods in Hamedan province and all other provinces are estimated, the corresponding share of expenditure allocated to Hamedan and all other provinces will be used.

2- According to Tayyebi and Ranjbar (2005), both expenditure and price elasticities are calculated as $\eta i = 1+ (\beta i / wi)[1-(\partial Logp / \partial Logx)]$ and $\varepsilon ij = -\delta ij + (1 / wi) [\gamma ij - \beta i(\partial Logp / \partial Logpj)]$. They assume that if each wi is independent of Logx, Logp, and Logpi in the long run, these elasticites become as $\eta i =1+ (\beta i / wi)$ and $\varepsilon ij = -\delta ij - \beta i (wj / wi) + (\gamma ij / wi)$, (i, j = 1, …, n). If $\delta ij = 1$ for i = j, we have $\varepsilon ii = -1- \beta i + (\gamma ij / wi)$.

least one overnight in Hamedan province in summer of 2003. The sample was selected by clustered random sampling method and the data were collected by interviewing the households and filling out questioners by interviewers.

2-2- Data

The data set includes data for the trip to Hamedan in summer of 2003 and for the total trips to other provinces in year 2003. The data for Hamedan trip includes such variables as the household total expenditures and the expenditures for each of the five groups of food, accommodation, transportation, visit of interests (monuments, sightseeing, …) entrance fees to enter the points of interest), and souvenirs[1], number of the trip days, number of household members in the trip, age and education level of all the household members, type of employment of the household head, distance of their home to Hamedan, size of the home city (small, large, or the center of the provinces), household annual income, types of the points of interest they visited, types of trip accommodation, types of their residence in home city, and what they liked or had problem with in their trip to Hamedan. For the trips to other provinces in the year 2003, the data set includes the total expenditures and total number of the days spent by each household.

Hamedan was, after Khorasan, Fars, and Isfahan, the fourth largest tourist province in Iran in 2002 (Keihani, 2003). It was selected for this study because it was a reasonably large province with diversified tourist points of interest and relatively more feasible to collect data from its tourist households. Hamedan domestic tourism made up a large percent (98.2% in 1998) of its total tourism, leaving only 1.8 percent for its international part (footnote 3).

Some descriptive results calculated from the sample data set are shown in Table 1. In fact, our descriptive results on several characteristics of the tourists such as age and education are consistent with results obtained by Salehi and Khoshfar (2000) that carried out a descriptive research on

1- Actually, the main commodities and services are food, accommodation, transportation, and visit of interests, while the group of souvenirs is added to control for AIDS conditions (see Section 3).

Table 1: Sample Household Descriptive Information of Domestic Trip to Hamedan in Summer of 2003 and Trips to other Provinces in Year 2003.[1]

	No. of Obs.	Mean	Std. Dev.	Min	Max
Income per month[1]	503	3,710.2	2,673	750	15,000
Total expenditure in Hamedan trip	501	789	648	12.5	5,533
Total expenditure in other provinces in 2003	504	3,294.6	2,788.4	0.0	17,592.5
Hamedan trip expend. Share from total trips in 2003 (%)		19.3			
Other province total trips expend. Share in 2003 (%)		80.7			
Food expenditure per day in Hamedan trip	494	98	84	0.0	500
Accommodation expenditure per day in Hamedan trip	497	66	117	0.0	800
Transportation expenditure per day in Hamedan trip	497	35	26	0.0	150
Visit fees expenditure in Hamedan trip	501	107	58	0.0	249
Souvenirs expenditure in Hamedan trip	434	162	198	0.0	150
Share of commodity expenditures in Hamedan trip (%)					
Food		31			
Accommodation		14			
Transportation		16			
Visit fees		20			
Souvenirs		18			
Number of days stayed in Hamedan trip	503	2.65	1.9	1	15
Number of days stayed in other provinces trips in 2003	486	13.6	11.8	0	97
Number of household members	503	4.14	1.4	1	8
Number of household members in Hamedan trip	503	3.69	1.3	1	8
Households without child		14			
Households without child in Hamedan trip (%)		20			
Rural household in Hamedan trip (%)		2			
Age of the household head in Hamedan trip (years)	501	41.36	9.1	20	72
Age of the spouse in Hamedan trip (years)	488	36.2	8.7	16	64
Level of education of household head (%):					
Less than primary		0.8			
Primary		3			
Guidance school		10			
Secondary		32.7			
Higher education		53.5			
Employment of household head (%):					
Employed		91.4			
Retired		8			
Students		0.6			
Spouses employed		31.7			
Number of points of interest visited in Hamedan trip		5			
Distance from source city to Hamedan (km)	501	549	319	75	1561
Source city, large or center of provinces		72			
Tourist households traveled by their own car (%)		83.7			

1. Household earnings in Iran is usually expressed in per month.
Source: Calculated from sample data.

1- Income and expenditures are in 1000 Rials.

Babolsar, a city in the north of Iran by using cross-section data. Information in this table shows that our sample households[1] were fairly well off since their average income in 2003 was more than 5,000 U.S. Dollars as compared to 2000 Dollars per capita income of Iran (World Bank, 2004) in the same year. This is consistent with research results of other countries showing that their tourists are more well off individuals. Our sample tourists also were better educated (53.5 percent had higher education) and with better employment situation (91.4 percent employed, 70 percent of which were government employed) than an average Iranian. Only two percent of the tourists were from rural areas; because rural people in summer time are highly engaged with farming. Besides, they travel more to religious places than to Hamedan that is more of a leisure place. Points of interest of Hamedan attracted tourists from distances ranging from 75 to 1561 kilometers. On the average, each household visited five points of interest in this trip.

Results revealed here indicate that close to 84 percent of these tourists came to Hamedan by their personal cars. It is interesting that as high as 93 percent of the families who had child took their children with them in the trip. This shows the existence of strong family ties in the sample households[2]. The highest share of the trip expenditure (31%) was spent on food and the least (14%) for accommodation. Because accommodation was relatively costly and difficult to catch, 19 percent of the tourists stayed in their relatives' homes. These descriptive data of Hamedan sample are consistent with those of Babolsar, a city in the north of Iran, found by Salehi and Khoshfar (2000), in several aspects. The household heads of both samples were mainly of middle age, high educated and well employed; their average length of trips were close to three days; their largest proportion of

1- In Iran, a large percentage of traveling is for religious purposes. Trips to Hamedan are mainly for leisure, however. Many of the tourists who travel for religious purpose from south of the country to Mashhad in Khorasan province, or from other places of Iran to Iraq, would on their way stay in Hamedan.

2- From the average 1.9 children that accompanied the parents in the trip, 11% were older than 20 years; 26%, 16 to 20; 42%, 7 to 15; and 21% younger than 7 years old.

the tourists came from Tehran province; and a high percentage of them used personal cars for their trip, Hamedan 83.7 and Babolsar 75 percent.

3- AIDS Estimated Results

We estimated seven regressions, using tion (8), for the household domestic tourism demand. The first five regressions were for the five groups of goods (services) namely: food, accommodation, transportation, visit of interests, and souvenirs in the trip to Hamedan, in the summer of 2003. The sixth one was for the household's trip to Hamedan and seventh for the household's trips to all other provinces in year 2003. In the sixth and seventh regressions, the dependent variables were, in turn, the shares of the expenditures allocated to Hamedan trip and to all other domestic trips in year 2003. All tions were estimated by the SURE method. Being concerned with the *adding up* restriction, in which one of tions in the demand system is left out during the estimation process while its parameters are estimated by imposing the restriction (Fakhrai and Vahedi 2001), we added a demand tion for souvenirs, as a substitution or complementary good, to the system to hold the condition.

The estimation of all of the seven regressions were repeated while adding such control variables as age and education level of the household members, type of employment of the household head, distance of their home to Hamedan, size of the home city (small, large, or the center of the provinces), household annual income, types of the points of interest they visited, type of trip accommodation, and type of their residence in home city. In none of the repeated regressions the estimated coefficients for the control variables were statistically significant, so that such variables were dropped from the related regression. For our discussion, the estimated results of the seven tions (without control variables) are picked up. The results of the fist five tions that are for the five commodity groups are shown in Table 2, and those of the sixth and the seventh tions, that are for the province levels, in Table 3. All of the estimated coefficients of the seven regressions are statistically significant.

According to Table 2, prices of food, accommodation, transportation, visits and souvenirs have various effects on the dependent variable, which is the expenditure share for the trip to Hamedan and other provinces. While the

coefficient of the own price for each commodity has positive sign, other prices affect indirectly the expenditure share in different tions. For instance, the coefficient of food price in tion 1 is significantly positive whereas all other price coefficients have been estimated negatively in this tion. This implies that the majority proportion of expenditure on food, for instance, depends on the food price during the trip to Hamedan and other provinces. Other things unchanged, the results obtained indicate that the significant estimated coefficient of the intercept, in each tion of five commodities in the domestic tourism to Hamedan, varies in a range of 0.03 to 0.42. It means there is a different initial demand for each commodity during trip to Hamedan so that the domestic tourism has to pay for regardless a price effect.

As previously explained, we can examine the existence of the homogeneity and symmetry restrictions. In order to test the homogeneity and symmetry restrictions, we follow Stewart (1991) to adopt the Normalized Akaike Information Criterion (*NAIC*) as a selection rule to the AIDS tions. The *NAIC* reads as follows: $NAIC = (-2\text{Ln}\,\acute{L} + 2k) / N$, where Ln $\acute{L}$ denotes the natural logarithm of the likelihood function evaluated as its maximum, k represents the number of parameters in the model, and N is the number of observation in the sample. We choose the model for which *NAIC* is a minimum due to the value for these symmetry restrictions ($NAIC_R$) or a value for an unrestricted AIDS specification ($NAIC_{UR}$). The relevant results reported in Table 2 approve the selection of the unrestricted system, namely $\Sigma\, \gamma_{ij} \neq 0$ and $\gamma_{ij} \neq \gamma_{ji}$.

By using the estimated coefficients (β_i and γ_{ij}) and the mean values (w_i), discussed previously, expenditure and own price elasticities of domestic demand for the sample are calculated for five commodities of Hamedan trip, for the whole Hamedan trip, and for the trips to other provinces. These elasticities are shown in Table 4 so that they are obtained in a range of -0.*10 to -0.8. Although all variables are less than one, the other provinces capture the maximum values for the price elasticities while accommodation is estimated by a maximum value of about 0.78 (absolute value) percent.

Table 2: AIDS Model's Results using tion (8) for the Demand of Five Commodities in the Domestic Tourism to Hamedan in Summer of 2003. The Dependent Variable is the Expenditure Share of Hamedan and other the Commodities.

Regression No.	1 (food)		2 (accommodation)		3 (transportation)		4 (visit fees)		5 (souvenirs)	
	Estimated Coefficient	t-value	Estimated coefficient	t-value	Estimated coefficient	t-value	Estimated coefficient	t-value	Estimated coefficient	t-value
Explanatory variables:										
Ln[1] of food price[2]	0.18**[3]	43.25	-0.02**	-5.92	-0.07**	-17.48	-0.05**	-9.20	-0.03**	-8.18
Ln of accommodation price	-0.07**	-23.49	0.13**	52.67	-0.03**	-9.17	-0.01**	-3.13	-0.02**	-5.55
Ln of transportation price	-0.06**	-13.30	-0.02**	-4.71	0.12**	25.48	-0.03**	-5.64	-0.01*	-2.16
Ln of visit fees' price	-0.03**	-6.93	-0.01*	-2.48	-0.04**	-7.13	0.10**	15.31	-0.02**	-3.19
Ln of souvenirs price	-0.03**	-13.96	-0.01**	-6.02	-0.02**	-8.23	-0.04**	-13.08	0.11**	43.24
Ln of Stone's[4] price index for food equipment	0.11**	15.11								
Ln of Stone's price index for accommodation equipment.			0.05**	7.99						
Ln of Stone's price index for transportation equipment					0.07**	9.96				
Ln of Stone's price index for visit fees equipment							-0.13**	-14.36		
Ln of Stone's price index for souvenirs equipment									-0.10**	-13.2
Intercept	0.08**	5.04	0.03*	2.60	0.20**	12.20	0.42**	20.21	0.27**	16.36
R^2 (adjusted)	0.84		0.88		0.67		0.65		0.83	
F-ratio	451.6**		595.93**		167.4**		153.3**		399.4**	
Number of observation	501		501		501		501		501	
[$NAIC_R$ = -17.237 and $NAIC_{UR}$ = -18.037][5]										

1. Ln = Natural logarithm
2. Ways of calculating commodity prices were explained in the methodology section.
3. * and ** represents statistically significant at 5% and 1%, respectively.
4. Ways of calculating Stone's price index were explained in the methodology section.
5. $NAIC_q$ ($q = R$ and UR) is used to test the homogeneity-symmetry restrictions in the AID-System.

Source: Calculated from sample data.

Table 3: AIDS model's results using tion (8) for the domestic tourism demand to Hamedan province in summer 2003 and to the other provinces of Iran in 2003. The dependent variable is the expenditure shares for Hamedan and for the other provinces

Regression number	6 (Hamedan)		7 (other provinces)	
	Estimated Coefficient	t-value	Estimated coefficient	t-value
Explanatory variables:				
Ln[1] of commodity price[2] of Hamedan	0.15**[3]	21.93	-0.15**	-22.77
Ln of commodity price of other provinces	-0.19**	-18.42	0.19**	19.20
Ln of Stone's[4] price index for Hamedan tion	-0.02**	-3.35		
Ln of Stone's price for other province tion			0.02**	2.95
Intercept	0.89**	13.11	0.13*	1.94
R^2 (adjusted)	0.62		0.64	
F- ratio	272.2**		289.8**	
Number of observation	491		491	

1. Ln = Natural logarithm
2. Ways of calculating commodity prices were explained in the methodology section.
3. * and ** represents statistically significant at 5% and 1%, respectively.
4. Ways of calculating Stone's price index were explained in the methodology section.

Source: Calculated from sample data.

Table 4: Expenditure and price elasticities of domestic demand using the estimated coefficients (β_i and γ_{ij}) and the mean values (w_i) for five commodities of Hamedan trip, and for whole Hamedan trip in summer of 2003, and for trips to other provinces in year 2003

	Commodities in Hamedan trip						
	Food	**Accommodation**	**Transportation**	**Visit Fees**	**Souvenir**	**Whole Hamedan trip**	**Other Provinces**
Expenditure Elasticities	1.34	1.32	1.47	0.36	0.47	0.91	1.02
Price Elasticities	-0.55	-0.12	-0.30	-0.39	-0.30	-0.29	-0.78

Source: Calculated using sample data (N=501 households).

As we compare commodity groups in Table 4, food, accommodation, and transportation behave as luxury goods, with the expenditure elasticities of larger than one, that is 1.34, 1.32, and 1.47, respectively, and visit fees and souvenirs as necessity goods; their respective elasticities are less than one, that is 0.36 and 0.47[1]. When Hamedan trip is compared to the other provinces, although both of them have expenditure elasticities of close to one, Hamedan has smaller expenditure elasticity (0.91) and other provinces larger (1.02). This implies that an increase in the total budget of the household yearly trips would be allocated by a smaller proportion to Hamedan trip as compared to other provinces.

Table 4 also shows that the domestic demand for all of the seven cases is price inelastic. Among the five commodity groups, food has the largest price elasticity (-0.55) and accommodation the smallest (-0.12), however. Comparing whole Hamedan with the other provinces, Hamedan has considerably lower price elasticity (-0.29) than other provinces (-0.78). An implication for these price elasticities being less than one is that the total sale values, for each of the individual commodity groups and for the total trips, would increase, if the prices rise (Ruffin, 1988, pp.120-128). Among the commodities, visit fees for getting to the points of interest are of special interest. For those points of interest, such as historical buildings, where a considerable part of the operating and maintenance costs are covered by state, the authorities can increase the price (the visit fees) and increase their total receipts. Social costs due to decrease in the number of visits and hence, less transfer of education to the visitors, is a trade-off that policy makers should take into account.

According to the results obtained, for the domestic tourists under study, food, accommodation and transportation in the trip were relatively luxury goods. That is, if the tourists' money allocated to traveling around the country increases by a certain proportion, they would spend money (typically cash) on these goods by a larger proportion. Visiting places and souvenirs, on

---

1- Notice that the estimated coefficients for the Stone's price index in Table 2 was negative for visit fees and souvenirs implying that the relationship between total deflated total expenditure and the share of expenditure for these commodities were reverse.

the other hand, were necessity goods. For which a smaller proportion of money would be spent if the allocated cash to travel increased by a certain proportion. These findings imply that policy makers should pay more attention to expansion of the three luxury goods. In principle, price elasticity of demand for the five commodity groups and for total trips to provinces is inelastic. When the demand is inelastic, the relationship between the changes of the price of the good and the total receipts from its selling is positive.

4- Conclusion

The purpose of this research was to estimate the expenditure and price elasticities of demand for the household domestic tourism in Iran, being particularly connected with Hamedan province, using cross-section data and the AIDS model. The calculated sample descriptive statistics, that are mainly consistent with the results of the other researches, show that the majority of tourist household heads were of middle age, fairly well off, high educated, well employed, traveled from larger cities, used their own cars and their trips last, on the average, close to three days. These finding, by and large, show that the Hamedan tourists did not include all social classes lly. Hence, there is room to expand the tourism industry and cover larger number of tourists by further facilitating the tourism activities and removing the problems. Further research is needed to put more light on these points.

The results of expenditure elasticities show that food, accommodation, and transportation are as luxury goods, with the expenditure elasticities of larger than one, and visit fees and souvenirs as necessity goods. When Hamedan trip is compared with other provinces, Hamedan trip has expenditure elasticity of smaller than one while other provinces have larger than one. Both elasticities are close to one, however. This implies that an increase in the total budget of the household yearly trips would be allocated by a smaller proportion to Hamedan trip as compared to other provinces.

The results of price elasticities show that the domestic tourism demand for the five commodity groups, whole Hamedan trip, and trips to other provinces in year 2003, were price inelastic. An implication of this finding is to compensate the high repair and maintenance costs of the points of interest, the authorities can make tourism promotion in such provinces by avoiding fears of price effect. Thus, social costs due to the price increase and hence

decrease in the number of visiting places a trade-off that policy makers should take into account, however.

References

1- Alpay, S. and A. Koc (2002), "Household Demand in Turkey: An Application of Almost Ideal Demand System with Spatial Cost Index." Working Paper 0226, Cairo: Economic Research Forum.

2- Asche, F. and C. R. Wessells (1997), "On Price Indices in the Almost Ideal Demand System." *American Journal of Agricultural Economics,*" Vol. 79, pp. 1182-1185.

3- Buse, A. (1994), "Evaluating the Linearized Almost Ideal Demand System," *American Journal of Agricultural Economics*, Vol. 76, pp 782-793.

4- Coenen, M. and L. van Eekeren (2003), "Demand for Domestic Tourism by Swedish Households," Department of Economics, Umea University, Sweden, *Umea Economic Studies* 578, 39 pages. http://www.econ.umu.se/use/use578.pdf.

5- Deaton, A. (1988), "Quality, Quantity, and Spatial Variation of Price," *American Economic Review*, Vol. 78, pp. 418-430.

6- Deaton, A. and J. Muellbauer (1980), "An Almost Ideal Demand System," *American Economic Review*, Vol. 70, No. 3, pp. 312-326.

7- Fakhrai, E. and M. Vahedi (2001), "Estimating Parameters and Elasticities of Import Demand for Dates and Raisins in England, Germany and France Markets," *Iranian Journal of Trade Studies* (*IJTS*) *Quarterly*, Vol. 5, No. 17, pp. 87-105.

8- Greene, W. H. (2000), *Econometric Analysis*. 4th Edition, Upper Saddle River, New Jersey: Prentice-Hall, Inc.

9- Green, R. and J. M. Alston (1990), "Elasticities in AIDS Models," *American Journal of Agricultural Economics,*" Vol. 72, pp. 442-445.

10- Habibi, F. (2002), Explanation and Estimation of Tourism Demand Model, Unpublished M. A. Thesis, Faculty of Economics, University of Tehran, Tehran, Iran.

11- Heien, D. M. and C. R. Wessells (1988), "The Demand for Dairy Products: Structure, Prediction, and Decomposition," *American Journal of Agricultural Economics*, Vol.70, pp. 219-228.

12- Kaveian, N. (2002), Estimation of International Tourism Demand in Iran, Unpublished M. A. Thesis, Department of Economics, University of Shahid Beheshti, Tehran, Iran.
13- Keihani, H. R. (2003), "Tourism Industry and Tourism Points of Interest in Hamedan Province," *Faslnameh-e Pazhooheshi Farhang*, Vol. 9, No. 30 and 31, pp. 78-92.
14- Key Note Ltd. (2001), An Overview of Your Marketplace from the UK's Leading Market Intelligence Service, *Insight Report*: http:/www.keynote.co. UK/ Insight/ uktravelandtourism.pdf.
15- Moraseli, A. (1996), Estimation of Supply and Demand of Foreign Tourism in Iran, Unpublished M. A. Thesis, Department of Social Science, Tarbiat Modarres University, Tehran, Iran.
16- Noori, M. (1996), Estimation of International Tourism Demand in Iran in 1969 to 1993, Unpublished M. A. Thesis, College of Economic and Social Sciences, Azzahra University, Tehran, Iran.
17- PPT (Pro-Poor Tourism) (2004), Sheet No.5 DC's as International Tourism Destinations, http://www.odi.org.uk/pptourism/inf-sheet/5%20inf%20sheet.pdf.
18- Rickertsen, K. (1998), "The Demand for Food and Beverages in Norway," *Agricultural Economics*, Vol. 18, No. 1, pp. 89-100.
19- Ruffin, R. J. (1988), Modern Price Theory, Glenview, Illinois: Foresman and Company.
20- Salehi, S. and Gh. Khoshfar (2000), "Study of Tourism in Babolsar," *Etelaat Siasi-Eghtesadi*, Tehran, Iran, Nos. 185-186.
21- Sampol, J. S. and E. A. Perez (2000), Tourism Expenditure Determinants in a Cross-section Data Model, University of Balearic Islands, Spain.
22- Soori, D. and P. Mashayekh-Ahangarani (1998), "Estimation of the Demand System of tions with Regard to the Social Characteristics of the Household", *Iranian of Trade Studies (IJTS) Quarterly*, Vol. 2, No. 6, pp. 109-145.
23- Stewart, J. (1991), *Econometrics*, New York: Philip Allan.
24- Tayyebi, S. K. and H. Ranjbar (2005), "An Investigation of Iran's Import Demand Structure: An Application of AIDS Model (1978-2002)," *Quarterly Iranian Economic Research*, Vol. 21, pp. 1-21. www.uam.es/otroscentros/Klein/docjor/juaneda.pdf (2003).

25- World Bank (2004), GNI Per Capita 2003, Atlas Method and PPP, World Development Indicators Database, http://www.worldbank. org/ databytopics/GNIPC.pdf