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**The Application of Hedonic Pricing Method in Estimating the
 Relationship between Services Levels, the Pollution, and
 House Prices in Selected Areas of Tabriz**

Khorshiddoust, A.M.*

Assoc. Prof., Department of Physical Geography, University of Tabriz, Tabriz - Iran

Received: May, 2007

Accepted: Apr., 2009

Extended Abstract

The economic and market value of environmental goods and services is latent, at least in the appearance. Among the conventional methods of evaluation and economic pricing of environment the hedonic pricing method (HPM) is based on this assumption that usually people show their demand level on the quality of environment through their settlement purchase.

Therefore, in making decision for buying a house, there is a hidden price in which the environmental quality is also evaluated, and the amount of demand for the consumption and/or the use of non-market goods and services such as the presence or absence of air or noise pollution is specified. HPM evaluates the economic value of places in environmental point of view using the quantitative and statistical methods. This article uses the HPM method for the analysis of the prices and the residential values in selected areas of Tabriz. Results of the analysis indicate significant correlation between variables, and emphasizing the hidden price of houses in peoples' willingness to pay for living in a better and pollution free environment.

The first step in HPM is the estimation of hidden price function as follows:

$$P=f(x_1,\dots,x_n) \quad (1)$$

In which P is the given price of the good, x_1 up to x_n is the characteristics of that good. The market price of any unit of product or good (p) is determined through the demand and supply therefore, we used a regression analysis method for estimation of equation (1):

$$P_h=a+b_1+b_2x_2+b_3x_3+b_4x_4+b_5U_h \quad (2)$$

We also specified the amount of effects of variables x_1 to x_n in order to estimate the independent variables' influence on prices.

The following diagram shows how (p) is affected by two different situation of place, namely, the pollution-free and polluted aspects.

D1 stands for housing demand in a polluted environment, and D2 shows the demand for a house in pollution-free area. The difference in prices for both locations is shown by dP which in fact specifies the amount of willingness to pay (WTP) for a better environment.

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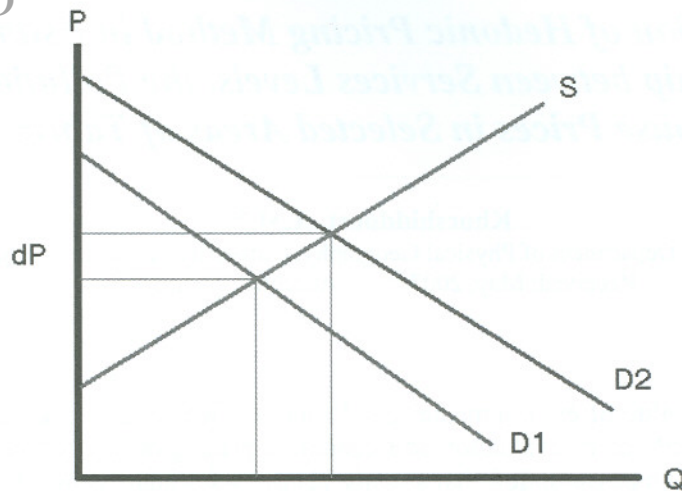


Fig.1: Willingness to pay curves for a clean and a polluted environment

Aims of the research

The main questions for carrying out this research were as follows:

- 1) Do the property owners give importance for the relationship between the environmental services such as clean air, or the concentration of atmospheric particles and the house prices?
- 2) Is it possible to price the environmental value of houses within the framework of real estate prices?
- 3) What types of data and information are needed for applying the HPM and the determination of variables?
- 4) How can we extract the demand curve for environment through the WTP of people?

Data and methods

Alongside the application of regression model, we used the following model for determining the WTP:

$$P = \alpha + S\beta + L\gamma + G\tau + \varepsilon \quad (3)$$

The definitions relating to the above equation are explained within the paper.

We referred to various real estate agents in Tabriz to gather the necessary information. 220 questionnaires were filled in randomly among property buyers in real estates. 40 questionnaires were put aside due to their uncertainty of answers. Map (1) shows the estimation of average house prices of identical physical conditions (the number of floors, the quality and area). The map was derived using ArcGIS software to study the area. The basis information for the house prices was the referral to 60 real estate agents in Tabriz. Although the perfect accuracy of announced house prices was not clear, the standard for approximate pollution levels were the data derived from pollution measurement stations, and the extent of green space in the areas.

Findings and discussion

About 50% of those respondents seeking to buy houses were university graduated. The average house price during the study period (2006-2007) was 70-90 Million Tomans (Approx. US\$ 80,000). The priority of environmental quality promotion in the questionnaire was the most imperative factor in selecting the house. Also green space took a vantage point in the respondents' views.

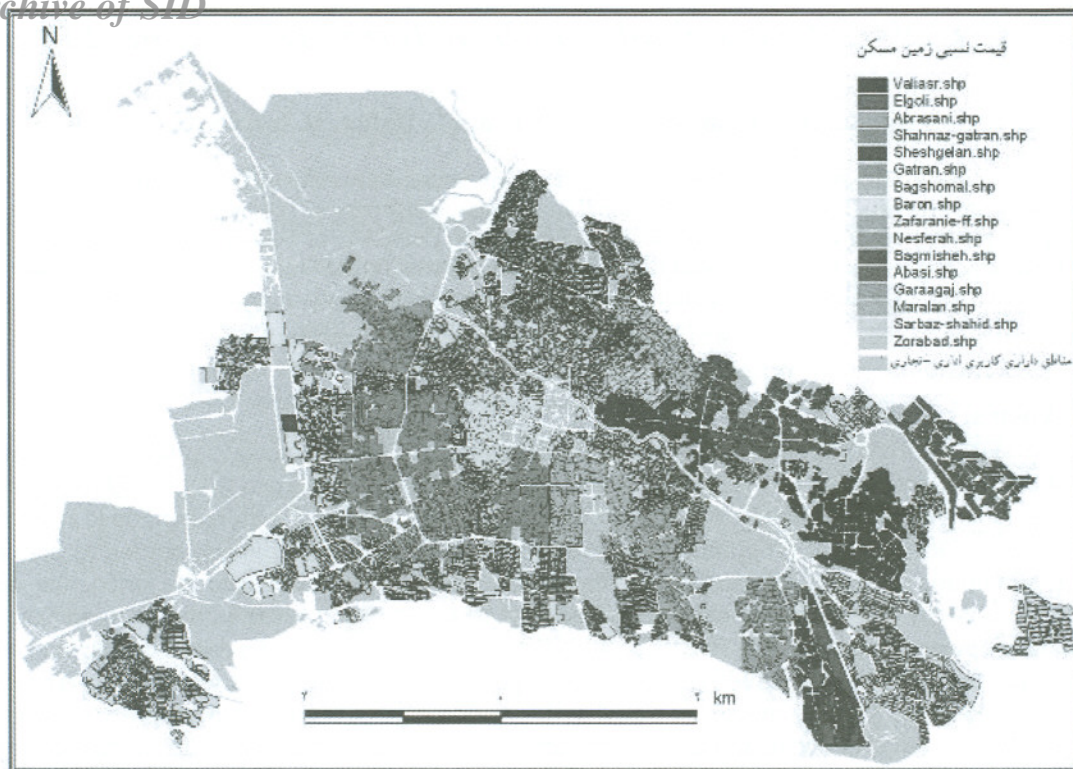


Fig. 2: Approximate property prices in Tabriz

The step-wise regression analysis results designated positive significant correlation in 95% confidence level between the independent variables of environmental quality, green space, and the access to services and dependent variable of house price. The null hypothesis thereby was rejected and the amount of r^2 was 68%. Final conclusion is that people "do" include the quality of environment in their choices of buying house or property and they allocate hidden prices to the environmental values and amenities for their purchase. This study showed that HPM can be a reliable method for appraisal and estimation of the effects of non-market environmental goods and services, on house prices and other amenities. Further research can focus on deeper aspects of environmental pricing in other similar areas of developing countries where the shortage of data and lack of a serious look and impression on environmental issues, especially among the decision makers and planners impose irreversible effects on the living environment.

Key Words

Hedonic Pricing Method, Environment, Pollution Level, House Prices, Tabriz