Journal of Modern Education Review, ISSN 2155-7993, USA
November 2020, Volume 10, No. 11, pp. 995–999
Doi: 10.15341/jmer(2155-7993)/11.10.2020/003

http://www.academicstar.us

Experimental Environmental Education With Handover of a Questionnaire for the Economic Assessment of Industrial Pollution

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Abstract: This method is based on the collection of information from individuals or households in the impact area of the project under investigation, in order to determine the maximum willingness to contribute in order to avoid or repair an environmental damage (Willingness To Pay: WTP) or the maximum willingness for financial compensation in case of a new environmental burden (Willingness To Accept: WTA). This method directly assesses the economic value of an environmental asset depending on the expressed preferences of the respondents and for this reason it is also referred to as the Dependent Assessment Method. The aim of the present study is for students to try to extort from respondents the amount they are willing to pay in order to suffer industrial pollution

Key words: experimental economics, hypothetical assessment method, environmental education, questionnaire

1. Introduction

The assessment of the economic value of the quality of the environment in the work or residential area was based on two main axes: The estimated impact of the quality of the environment on the value of the property, which reflects use values. The desire of the financial contribution of the inhabitants of the area for the relocation of the factory the target population was the people living in the wider area of the factory. A total of 150 people were selected as a sample. The sample size meets the requirements of this research and the rules of statistical science and is in line with international experience and practice. The research took place in the area of Eleusina on 11-06-2014 at 12:30-16:30 and in the area of Chalkida on 12-06-2014 at 13:30-14:30 and on 13-06-2008 during the hours 12:00-13:00. In the area of Ag. Theodoron, the research was carried out on 14-06-2014 in the central square of Ag. Theodoron during the hours 11:00-15:00. Also for the area of Eleusina, questionnaires were given to employees at the factory. The above research was done in a passing motley sample, not continuously but with breaks.

2. Questionnaire Construction

The questionnaire was prepared taking into account the basic principles of the science of social research, the results of international research and practical experience in the field of environmental economics and the specifics

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of this case.

The questionnaire consisted of a total of sixteen questions, of which six related to the personal data of the respondents. The number of questions was determined with the aim of gathering all the necessary information, in a reasonable interview time. The questions, which were asked in the simplest possible way, were simple and multiple choice and included the following types: (a) closed question with regular and nominal scale, (b) open-ended question and (c) semi-open-ended question, in combination with nominal scale. The three initial questions were aimed at introducing the respondent to the research topic and gathering quality information regarding the degree of awareness of the problem as well as any benefits from job creation or any damage to property value. The following questions were the "heart" of the research. They deal with the willingness to pay or accept a sum of money in order for the respondents to remove or tolerate the factory where the amount of money was determined, with an open question. In the last part of the questionnaire were collected the basic demographic data of the respondents (place of residence, gender, age of the respondent, educational level, etc.), which were used in the statistical processing of the results.

3. Results

According to the survey answers, the owners or tenants who live near the factory responded/answered at a rate of about 64%, that the value of the house is higher. About 8% responded that the value of their home does not differ from the presence of the factory, while about 28% said they did not know if the value of their home was affected. In the majority (approximately 80%), respondents who answered that their home acquires a lower value due to the factory in the nearby area, identified this increase at a rate ranging between 10% and 50% (either as purchase cost or as rental costs). 20% said that this increase is greater. In fact, 7.5% believe that the factory gives their home a 100% reduction in value. Based on the results of all respondents living near a factory (including those who reported a zero reduction in value and excluding those who said they did not know), the average estimated reduction in the value of the home is 37.3% and the median to 30%. The standard deviation was estimated at 26.2%. Then, the relationship of the added value of the house with the other variables of the research (distance from factory, sex, income, etc.) was examined, in order to examine the existence or not of the difference between the assigned averages. As evidenced by the statistical tests performed, there was a violation of the principle of regularity and therefore the tests were performed with the non-parametric statistical criteria Mann — Whitney and Kruska.

4. Discussion

The object of the present work was the Environmental Education of the students through a tool of Experimental Economics and specifically with the handing over of a questionnaire designed in order to evaluate the benefits/burdens of each neighboring factory, in financial terms, in Chalkida, Eleusina Theodorous, with the Hypothetical Evaluation Method. The valuation was based on two main axes, with the aim of investigating use and non-use values. The use values were examined based on the desire of the respondents to pay more money. The survey results showed that, on average, those living away from the factory are willing to accept a 36.7% increase (median 30%) in order to move to a greener area. These results are consistent both with the estimates of real estate market experts, based on the results of previous research in the Basin, and with the perceptions of those who already live near the factory, regarding the degradation of the value received by their home, due to proximity to

these industrial sites (average price 37.3% and median 30%). It is worth noting that compared to the results of other surveys in Europe and the USA, the estimated percentage reduction in the value of housing is higher. This may, at least in part, reflect the very low ratio of factory units per inhabitant in these areas, compared to European and American industrial zones. As the statistical audits show, the impression of a decrease in value depends on the existing ownership status, professional status and educational level. The amount available to accept the charge in the area permanently depends significantly on the property status.

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Appendix Questionnaire

1. The pollution caused in the area by the operation of the factory is
   1) small
   2) medium
   3) large

2. The contribution of the factory to the employment of the inhabitants of the area is
   1) small
   2) medium
   3) large

3. If there was no factory, the value of land in the area would be
   1) smaller
   2) same
   3) larger
   4) much bigger

4. How many meters (in a straight line) is your home or the place where you work (or just frequent) from the factory?

5. What is the smallest amount of money (in euros) that you would accept to receive now as a lump sum in compensation, in order to accept the operation of the factory forever, without any objection?

6. If you are donated 10,000 euros to do what you want, what specific amount of money would you give to relocate the factory to an area far from here?

7. In your current financial situation, what is the largest amount (in euros) you would give to relocate the plant to an area far from here?

8. You would characterize your income, in relation to the average income of the inhabitants of the area:
   1) small
   2) same
   3) larger

9. The measures taken by the factory to protect the environment are:
   1) negligible
   2) moderate
   3) satisfactory

10. You prefer:
   1) To keep the situation as it is or
   2) Take the plant and other measures to protect the environment or
   3) To relocate to another area away from here

11. You are finished:
   1) Primary
   2) High school
   3) Lyceum
   4) Another school after high school

12. Your age is:
   1) 18-27
   2) 28-37
   3) 38-47
   4) 48-57
   5) 58-67
   6) 68-77
   7) 78-87
   8) 88-97

Gender: A. Man B. Woman

Permanent resident of the area: N. YES O. NO

Owner of real estate in the area: N. YES O. NO

Self-employed or family environment worker in the factory: N. YES O. NO