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The WTP Method as an Index of Taxation for Environmental Restoration in the City of Thessaloniki in Greece

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Abstract: The purpose of this study is to provide an evaluation of the possible criteria used by the people of Thessaloniki for the evaluation of public goods and the investigation of the benefits of the conservation and restoration of city structures affected by carbon monoxide. These benefits are expressed in monetary units by using the CVM (Contingent Valuation Method). The maintenance of the urban environment often entails excessive costs paid by the people through taxation. A city free of aesthetic pollution results in an increase in tourism. A portion of taxation paid by the citizens is allocated to cleaning the city. An increase in tourism provides the government with additional revenue through VAT (Value Added Taxes). The increase in the money supply is not significant enough to affect the inflation rate, but gives the government additional revenue for the maintenance of the city and additional resources to service the national debt. The evaluation of these public goods cannot be expressed in the private sector, so authors applied a modified version of the CVM which is a survey-based technique used in experimental economics. The study sample was 100 citizens of Thessaloniki. The objective of this study was to determine the citizens' of Thessaloniki WTP (Willingness To Pay) for this public goods. Furthermore, the objective of this study was to investigate the willingness of the citizens to pay more taxes for the conservation/restoration of building facades in the historic sectors of Thessaloniki. The main findings show that in a large proportion, 28% of the interviewees are willing to pay, but those that are willing to pay significant amounts tend to prefer mild interventions to the buildings, while those (42%) that agree with minimal to null amount demand radical intervention. The latter group, also, considers any contribution of theirs to restoration as unfair, judging that this expenditure should be covered exclusively by the State. Last but not least, from a sociopsychological point of view, this attitude could be attributed to extreme personalities which tend to prefer more holistic and direct solutions (i.e., no mixed strategy involving people and the State is acceptable by interviewees who considered themselves as having no further obligations after regular tax-paying); as a result, they think that the State is exclusively responsible to resolve the situation.

Key words: Public goods, WTP, CVM, taxation.

1. Introduction

According to literature from an economics perspective, public goods are of interest because—unlike private goods—they are a source of market failure [1]. The problem is "free riding": individuals have little incentive to voluntarily provide public goods when they can simply enjoy the benefits of non-rival and non-excludable pubic goods provided by others. To see free riding at work, consider the challenge of constructing a bridge where the societal benefits of doing so would exceed the costs. How successful do you think a campaign would be to finance the bridge with voluntary donations? It is not hard to imagine how such a campaign would fail, because many individuals would choose to make no donation, hoping others would contribute enough to finance the bridge for everyone to enjoy. In this scenario, the market failure would be that no bridge is constructed despite the fact that a bridge would make everyone better off [1].

Seeking to prevent such under-provision of public goods is one of the primary economic rationales for government. While markets allocate private goods

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efficiently, governmental intervention is usually required for the efficient (or even reasonable) allocation of public goods. Indeed, this explains why goods such as bridges, parks, police protection and fire departments are usually financed with tax revenues that governments collect. Governments can thus serve as a coordinating mechanism that provides public goods for the benefit of society [2].

This research investigates the aesthetic pollution caused by carbon monoxide on building structures in the historical sectors of Thessaloniki and will be conducted with a methodology related to environmental economics [3].

Researchers argue that the potential problem of microeconomic theory is how natural resources are optimally distributed [2, 3]. The basic idea behind the evaluation of environmental public goods such as the aesthetics of the urban environment is based on the individual's WTP (Willingness To Pay) for a cleaner urban environment and enjoy the environmental public good or alternatively, be compensated with monetary units (WTA (Willingness to Accept)), and accept the loss. The citizens receive a benefit from the consumption of private and public goods [4].

The criteria used to show the evaluation of public goods and the costs related to the impact of the natural environment and the potential benefits that the citizens receive are determined in this study. However, and as pointed by authors it is difficult to reconcile the utility value of public goods such as the environment (natural or urban) because the values of these goods cannot be seen directly or indirectly through transactions [5, 6].

2. Literature Review

Empirical research has suggested that WTP is related to the moral satisfaction one can derive from making a contribution to a public good. This is in line with the study of literature review whose results suggest that the adoption of the WTP measure does not really avoid moral concerns because the voluntary contribution to the provision of such goods can be morally satisfying. A treatment that interprets contributions to public goods as equivalent to purchases of consumption goods is inadequate when moral satisfaction is an important part of the welfare gain from the contribution. The amount that individuals are willing to pay to acquire moral satisfaction should not be mistaken for a measure of the economic value of public goods.

The impact of site-specific information is especially strong on respondents who expressed a neutral attitude towards historic preservation in general and on respondents who had lower general educational achievement. These findings contribute to the line of research regarding differential effects of information provision and suggest a need for further investigation into the relative roles of "narrow" versus "broad" concepts of respondents' prior understandings [7, 8].

3. Data and Statistical Methods

It is estimated approximately the size of the external economy by the method of the CVM (Contingent Valuation Method). The CVM is a survey-based technique, frequently used in experimental economics, especially useful for the valuation of non-market resources/goods/services, and cultural heritage objects (of aesthetic, historic, scientific or social value), such as conservation of monumental remains and preservation of the physical and anthropogenic environment. The basic dependent variables used in CVM are: (i) WTP, which is the maximum monetary amount that an individual would pay to obtain/preserve a good, and (ii) WTA compensation, which is the minimum monetary amount required to relinquish the good. Therefore, WTP provides a purchase price, relevant for valuing the proposed gain of the good while WTA provides a selling price, relevant for valuing the proposed loss of the good. According to classic economic theory, a significant difference between WTP and WTA should not occur, on condition that there is: (i) no transaction cost, (ii)

perfect information about goods/services and corresponding prices, (iii) no income effect, (iv) a market that engenders truthful revelation of preferences [9, 10].

Although these conditions were generally met in several economic experiments that used inexpensive market goods with readily available substitutes, the ratios WTA/WTP obtained were significantly greater than unity. This result was attributed to the fact that participants in these experiments lacked market experience [10].

In case that the CVM is applied for monumental remains, certain specific problems arise, because (i) the "good" under examination has a subjective value, dependent on the cultural level of each interviewee, (ii) the intangibles associated with this "good" are related to the present political behavior of each individual as regards his/her attitude to the local authorities or the central government, (iii) as a result, the answers may be biased, a matter that becomes evident only after final statistical processing, thus calling for supplementary information, possibly by means of an additional post-questionnaire, and (iv) the adopted/developed (for elicitation of people's WTP) technique itself should be revised (possibly by means of a meta-questionnaire) by the same group of experts who processed the answers in order to improve the questionnaire and store it into a dedicated KB (Knowledge Base) for future usage, since each monument is unique and the results coming from examining quasi-similar cases are of limited value.

The interviewees are 100 responses regarding the WTP. The descriptive statistics provide helpful information on the percent frequency of the WTP-value: 36% of the sample suggested WTP = 0 €, 16% agreed with WTP = 1-10 €, 10% accepted WTP = 11-50 €, 20% mentioned WTP = 51-100 €, while 18% were willing to pay > 100 €.

One of the principle descriptors investigated in the main study concerns the preference of the interviewees about the options (i) leave the situation as is, (ii) perform only the necessary remediation, or (iii) proceed with radical restoration. Option (i) has been selected only by 12.5% of those that stated WTP = 1-10 €, which gives a 2% of the total sample. Option (ii) is supported by 51% of the total sample, i.e., 61.1% of those with WTP = 0 €, 37.5% of those with WTP = 1-10 €, 40% of those with WTP = 11-50 €, 70% of those with WTP = 51-100 € and 27.8% of those with WTP > 100 €. Option (iii) has been proposed by 47% of the interviewees, i.e., 38.9% of those with WTP = 0 €, 50% of those with WTP = 1-10 €, 60% of those with WTP = 11-50 €, 30% of those with WTP = 51-100 € and 72.2% of those with WTP > 100 €.

It is worthwhile noting the relation between WTP and preference on restoration options. The interviewees that are willing to pay significant amounts tend to prefer a mild intervention, while those that agree with minimal to null amounts demand radical intervention. The latter group, also, considers any contribution of theirs to restoration as unfair judging that this expenditure should be covered exclusively by the State. From a sociopsychological point of view, this attitude may reflect extreme personalities with a tendency to holistic and pure solution (i.e., no mixed strategy involving people and the State is acceptable by interviewees who considered themselves as having no further obligations after regular tax-paying); as a result, they think that the State is exclusively responsible to resolve the situation.

4. Discussion

In this paper, it is considered the natural environment to be a public good and environmental pollution to be an external economy which the price mechanism fails to internalize. In all three cases, the approach of foreign trade was with the WTP method and the external costs were calculated generated by the degradation of the environment from the responses of respondents in monetary units. Respondents answered without knowing the environments' original

condition and without expectations to return to its original form and not expecting it to return to its original form which is the prerequisite in order to avoid information bias as stated by researchers [3, 4]. The quality of the clean environment and therefore the estimation of foreign economic burden caused by contamination depend on personal criteria and the personal endorsement of the value of that public good. In addition, the natural environment's altering of its original state cannot be determined. Human works and buildings create new values in the region and therefore the external costs can be measured only by the expected quality of the environment which is not lost. The expected quality of the environment is not lost. Allowances, taxation and value of land use are calculated solely on the expected image of the landscape.

5. Conclusion

Therefore, the Pareto optimal socioeconomic lines status is defined according to the new form of environment created after the regeneration of areas and not according to the initial state of the environment. Also, in Kaldor compensation it should be determined based on the economic valuation of public goods by their own people, who judge based on expectations rather than on the past. The expected form of natural environment varies from respondent to respondent and its approach to social welfare units can only be done through alternative scenarios best and worst scenario. In any case, the society wants to reach the minimum point of the charge received from the pollution and what can be achieved by the "invisible hand", but the regulation and government intervention. History has shown that the charge received by the society because of pollution varies with the socioeconomic status of citizens. The more low-income residents, the more elastic is the loss of the natural environment. The elasticity of citizens deprived or not of the physical environment is a measurable size.

For many years, the urban fabrics of large urban centers, including Thessaloniki, have faced the problem of outdoor advertising and the pollution (aesthetics and material) that it created (posters, giants, stickers, etc.). The problem has led to a legal ban and eventually dismantling of outdoor advertisements. Businesses and advertisers can no longer find a natural place to display their products, and the only alternative is electronic advertising. Electronic advertising does not fully meet the advertiser's needs as some society groups (such as elderly people) do not have access to electronic technology. So the concern for aesthetic upgrading has deprived businesses of advertising and income from dozens of employees.

It is considered the natural environment as a public good and environmental pollution as an external economy that the price mechanism fails to internalize. In all three cases, the approach of foreign trade was with the WTP method and the external costs were calculated generated by the degradation of the environment from the responses of respondents in monetary units. Respondents answered without knowing it was the environment to its original condition and not expecting it to return to its original form. Human works and buildings create new values in the region and therefore the external costs can be measured only with the expected quality of the environment and is not lost. Allowances, taxation and value of land use are calculated solely on the expected image of the landscape.

Therefore, the Pareto optimal socioeconomic lines status are defined according to the new form of environment created after the regeneration of areas and not according to the initial state of the environment. Also, in Kaldor compensation should be determined based on the economic valuation of public goods by their own people, who judge based on expectations rather than on the past. The expected form of natural environment varies from respondent to respondent and its approach to social welfare units can only be done through alternative best scenarios and

worst scenario. In any case, the society wants to reach the minimum point of the charge received from the pollution and what can be achieved by the "invisible hand", but the regulation and government intervention. History has shown that the charge received by the society because of pollution varies with the socioeconomic status of citizens. The more low-income residents, the more elastic is the loss of the natural environment. The elasticity of citizens deprived of or not the physical environment is measurable size.

References

[1] Ajzen, I., Brown, T., and Rosenthal, L. 1996. "Information Bias in Contingent Valuation: Effects of Personal Relevance, Quality of Information, and Motivational Orientation." *Journal of Environmental Economics and Management* 30: 43-57.

[2] Bateman, I., Munro, A., Rhodes, B., Starmer C., and Sugden, R. 1997. "A Test of the Theory of Reference-Dependent Preferences." *Quarterly Journal of Economics* 112: 479-505.

[3] Bedate, A., Herrero, L. C., and Sanz, J. A. 2005. "Economic Valuation of the Cultural Heritage: Application to Four Case Studies in Spain." *Journal of Cultural Heritage* 5: 101-11.

[4] Brown, T. C. 2005. "Loss Aversion without the Endowment Effect, and other Explanations for the WTA-WTP Disparity." *Journal of Economic Behavior and Organization* 57: 367-79.

[5] Hanemann, M. 1991. "Willingness to Pay and Willingness to Accept: How Much Can They Differ?" *American Economic Review* 81 (3): 635-47.

[6] Horowitz, J. K., and McConnell, K. E. 2003. "Willingness to Accept, Willingness to Pay and the Income Effect." *Journal of Economic Behavior and Organization* 51: 537-45.

[7] Kahneman, D., and Knetsch, L. J. 1992. "Valuing Public Goods: The Purchase of Moral Satisfaction." *Journal of Environmental Economics and Management* 22: 57-70.

[8] Kling, R. W., Revier, C. F., and Sable, K. 2004. "Estimating the Public Good Value of Preserving a Local Historic Landmark: The Role of Non-substitutability and Citizen Information." *Urban Studies* 41 (10): 2025-41.

[9] Kopsidas, O., and Batzias, F. 2011. "Improvement of Urban Environment and Preservation of Cultural Heritage through Experimental Economics by a Modified Contingent Valuation Method (CVM)." *Recent Researched in Energy, Environment, Devices, Systems, Communications and Computers*, pp. 157-62.

[10] Liao, T. F. 1994. *Interpreting Probability Models: Logit, Probit, and Other Generalized Linear Models*. London: SAGE Publications Inc..