

# The Contingent Valuation Method for Thessaloniki's Aesthetic Pollution 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 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 (Willingness To Pay), CVM (Contingent Valuation Method), taxation.

# 1. Introduction

According to Ajzen, I., et al. [1], from an economics perspective, public goods are of interest because—unlike private goods—they are a source of market failure. 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. A practical example of free riding could be the construction of a bridge where the societal benefits 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 (if not most) individuals would choose to make no donation, hoping others would contribute enough to finance the

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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.

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

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 Economic demonstrated by Bedate, A., et al. [2]. This evaluation method will calculate the total benefit for the city of Thessaloniki [1].

Kahneman, D. and Knetsch, L. J. [3] argue that the potential problem of microeconomic theory is how natural resources are optimally distributed. The basic idea behind the evaluation of environmental public goods, is based on the individual's WTP (Willingness To Pay) or alternatively, should be compensated with monetary units (Willingness To Accept—WTA), and accept the loss of this public good. In the case of the aesthetics of the urban environment, this could be demonstrated by willingness to pay for a cleaner urban environment and enjoy the environmental public good. The citizens receive a benefit from the consumption of private and public goods [2].

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, as pointed by Bateman, I., et al. [4], 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 [2].

## 2. Literature Review

According to Ajzen, I., et al. [1], a factor of potential relevance for CVM (Contingent Valuation Method) estimates concerning public goods and it is the salience of altruistic or individualistic motives. Altruistic as opposed to individualistic orientations may, therefore, be particularly relevant motivational cues in contingent valuation surveys. Empirical research has suggested that WTP is related to the moral satisfaction that can derive from making a contribution to a public good. This is in line with the study of Kahneman, D. and Knetsch, L. J. [3] 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 [5, 6].

When respondents lack prior knowledge about the public good, as is the case with most goods considered in CV surveys, information bias is likely to occur, as claimed by Ajzen, I., et al. [1]. At the very least, their results indicate that extreme care should be exercised in designing the information presented to respondents so that it contains as little bias as possible. In addition, findings of other researchers as Bedate, A., et al. [2], show that the expected value of WTP jumps markedly and significantly with any positive amount of experience of the proposed resource for particular environmental enhancement. Their Poisson censored-normal specifications with endogenous experience are consistent with the prevailing intuition that more experienced respondents provide more precise WTP information [6, 7].

According to the theoretical perspective of Kling, R. W., et al. [8], analysis results show that the provision of richer site-specific information to household respondents has the main result of making demand for preservation much more inelastic with respect to price [3, 8]. This result also signals that non-substitutability is a major factor behind how households value this type of heritage asset. 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 [8-11].

# 3. Data and Statistical Methods

Authors estimate approximately the size of the external economy by the method of the CVM. 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 [5], 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.

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 that unity. This result, according to Liao, T. F. [10], was attributed to the fact that participants in these experiments lacked market experience.

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 reviewee; (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 (iv) additional post-questionnaire; and 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 sample N-valid are 100 responses regarding the Willingness To Pay and N-missing is null. The descriptive statistics provide helpful information on the percent frequency of the WTP-value: 36% of the sample suggested WTP =  $0 \in 16\%$  agreed with WTP =  $1-10 \in 10\%$  accepted WTP =  $11-50 \in 20\%$  mentioned WTP =  $51-100 \in$ , while 18% was willing to pay >  $100 \in$ .

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  $\in$ , 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 analysis, 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 CVM and calculated the external costs 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 is the prerequisite in order to avoid information bias as stated by Ajzen, I., et al. [1].

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. 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 the best and the 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 the loss of the natural environment is. The elasticity of citizens deprived or not of the physical environment is a measurable size.

Further, the cooperation between private economy and the financial sector is crucial to improve the urban environment, as this refers to reduction practice from micro to macroeconomic environment.

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.

In this analysis, it is considered the natural environment as a public good and environmental pollution as an external economy. Respondents answered without knowing it was the environment to its original condition and not expecting it to return to

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