The Monetary Value of Cultural Goods: A Contingent Valuation Study of the Municipal Supply of Cultural Goods in Lueneburg, Germany

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Abstract

This paper aims to determine if the contingent valuation method (CVM) can provide valid results useful in policy-making. This will be investigated by using a CV study that captures the willingness to pay (WTP) for the municipal cultural supply in Lueneburg, Germany. In contrast to previous CV studies that included a wide range of descriptive statistics, the empirical analysis of the current study focuses on multivariate analysis to explore the factors associated with the WTP. The results reflect current hypotheses in cultural economics. Thus, higher education levels and higher income are positively correlated with higher WTP. While the results indicate a highly significant impact of non-use values on the WTP for cultural goods across the different regression models, the findings for some variables differ considerably in magnitude across different regression models.

Keywords: Cultural Goods, Contingent Valuation, Willingness to Pay

JEL-Classification: H44, Z10

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1 Introduction

During the 2004/2005 season, nearly 44% of the 330 theatres and about 60% of the 6155 museums in Germany were run partially or completely by public authorities (Deutscher Buehnenverein 2006/Institut für Museumsforschung 2006)[1]. These figures reveal the major role of public authorities in the provision of cultural goods in Germany. Since German cultural policy is organized locally, the "Laender" (German Federal States) and the local authorities bear nearly 90% of the financial burden (Statistische Aemter des Bundes und der Laender, 2006). During the annual hearings on the municipal budgets, the amount spent on cultural goods is discussed and determined, depending principally on the financial burden of the previous year and necessary investments for the next year. However, the question of whether the amount of cultural goods provided by public authorities is economically optimal takes a back seat. This could be because of rent-seeking behaviour of local politicians who do not want to diminish their available budget or because of missing information about the preferences of the population for cultural goods. The latter point refers particularly to the so-called non-use values of a good which are not directly connected with its usage, like existence, option, bequest, education or prestige. These positive externalities generated by the cultural goods cannot be internalized by the competitive market, e.g., via entrance fees. From the economic point of view, the non-use values justify intervention into the market in the form of paying subsidies, so public authorities must know the level of non-use values attributed to the existing cultural goods to determine the optimal level of subsidies. Therefore, valid information about these non-use values would be important considerations in municipal budgeting.

In the past four decades, a great many studies have been conducted to determine the value attributed to public goods. Several methods, which can be divided into revealed preference and stated preference techniques, were first developed and applied in the field of environmental economics (Mitchell/Carson, 1990). Revealed preference methods observe preferences for certain private goods which have a complementary or substitutive relationship to the public good of interest. The best known revealed preference methods are the travel cost method and the hedonic pricing method (Bateman, 1992). The travel cost method regards the amount of money spent on private

[1] The total number of theatres and museums is derived from those which are recorded by the German Stage Association and the Institute for Museum Research.

goods to enable the consumption of the public good because, it is argued, these expenditures reflect the preferences for the public good. Examples of inputs for the travel cost method are the petrol expenditure or the ticket price for public transport spent to attend a performance. The travel cost method has been applied to cultural goods by Alberini/Longo (2005) and Boter et al. (2005), among others. The problems with this method are that, in most cases, the costs cannot be related clearly to the consumption of the public good and it cannot capture the non-use values attributed to the good. The same problem arises for the hedonic pricing method, which uses data about housing markets to derive preferences for public goods such as air quality, noise or nearby public facilities. The method can be applied not only to housing markets but also to other markets, like tourism (Vanslembrouck et al., 2005) or farm land (Coelli et al., 1991).

Unlike the revealed preference techniques, the stated preference techniques can capture the non-use values attributed to public goods. The best known use of this technique is the contingent valuation method (CVM). This method presents a hypothetical scenario of a quantity or quality change in a public good and asks individuals directly what they are willing to pay for the scenario to be realized. The scenario should contain detailed information about the public good and the arrangement of the quantity or quality change. The CVM has been applied to cultural goods for more than 20 years (Navrud/Ready, 2002), and the goods being valued range from cultural heritage sites (Carson et al., 2002; Santagata/Signorello, 2000) and public cultural facilities (Hansen, 1997; Throsby/Withers, 1983) to media art (Papandrea, 1999).

A very recently developed method to capture individual preferences for public goods is the life satisfaction approach, which cannot be easily classified into either the stated preference or revealed preference techniques. The life satisfaction approach analyses the impact of a certain public good on reported well being (Frey et al., 2004)[2]. To express the utility attributed to the public good in monetary terms, the results are combined with estimates for the marginal utility of income (Welsch, 2007). In contrast to the CVM, the life satisfaction approach is considerably less vulnerable to strategic behaviour, as the necessary data is collected without any connection with public goods. To date, there have been no applications of the life satisfaction approach to cultural goods, a situation which can be attributed to the difficulties in drawing spatial

[2] Such data can be found in the German Socio-Economic Panel Study (SOEP), for example, where respondents are asked to report their individual life satisfaction on a scale from 0 to 10.

boundaries in respect to the non-use values (Frey et al., 2004). Moreover, the method is only partially able to collect non-use values attributed to public goods. Because the non-use values are of particular interest in the current study, the CVM is the preferable method.

This paper aims to determine whether the CVM can provide valid results useful in making policy. This will be investigated using a CV study that captures the willingness to pay (WTP) for the municipal cultural supply in Lueneburg, Germany. In contrast to previous CV studies that have included a wide range of descriptive statistics, the focus of the empirical analysis in this paper is on multivariate analysis to explore the factors associated with the WTP. Therefore, the commonly applied OLS and Tobit regression models are supplemented by a quantile regression model.

The paper is organized as follows. Section 2 discusses the theoretical foundations of applying the CVM to cultural goods by presenting the WTP as a measure for utility. The methodology of the survey is described in section 3, followed by details of the empirical model in section 4. Sections 5 and 6 present the results of the empirical analysis, and section 7 concludes the paper.

2 The WTP as a measure for utility

Preferences are represented in the form of utility functions since they cannot be observed directly. Methods like the CVM capture the WTP as a measure of utility by means of the analytical relationship between WTP and utility (e.g. Perman et al., 2003 or Nicholson, 2005).

The utility can be described by the indirect utility function

$$U = V\left(p_y, I, q_x\right) \tag{1}$$

where p_y is a vector of prices for all private goods y, I is the income, and q_x is an indicator for the quantity of the public good x. Expenditure functions in the form of

$$E = E\left(p_y, U, q_x\right) \tag{2}$$

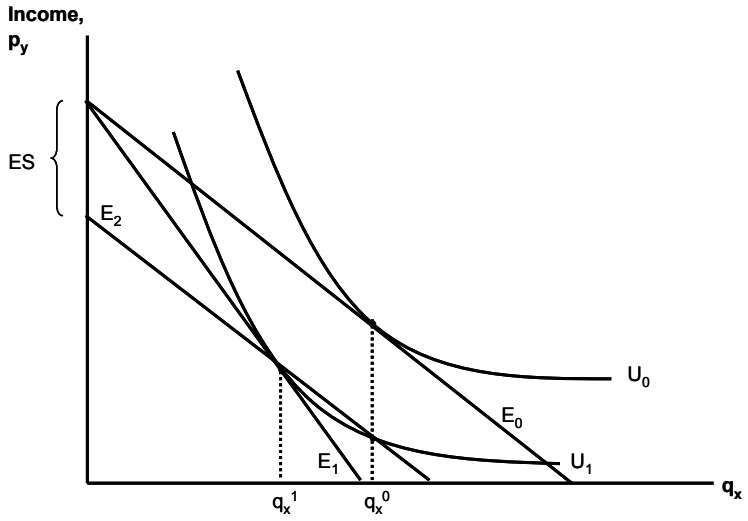
are used to analyse the WTP by describing the minimal expenditures necessary to achieve a specific utility level U. As can be seen, the expenditure function is the inverse of the indirect utility function. The WTP for a quantity change of a specific

public good can be measured by the difference between the minimal expenditures for the good before and after the quantity change (q_x^0 and q_x^1). In the case of a reduction of the provided public good, the equivalent surplus (ES) measures the WTP for avoiding the change. The reference utility level is U^1, which reflects the utility after the change:

$$ES = E\left(p_y, U^1, q_x^1\right) - E(p_y, U^1, q_x^0) \tag{3}$$

Therefore, the ES is the amount which an individual is willing to pay to avoid the loss in utility resulting from a reduction in the publicly provided good. This is illustrated in Figure 1[3], where an individual is initially able to consume the quantity q_x^0 of the public good x.

Figure 1: The equivalent surplus to avoid a quantity reduction of the public good



E_0 reflects the individual's budget constraint, which equals the minimal expenditure to achieve the utility level U_0 when q_x is q_x^0. If, because of a policy measure, the quantity of the public good x decreases from q_x^0 to q_x^1 which equals a price increase of x, the budget constraint turns inwards, given by E_1 and the individual's utility decreases to the level U_1. To analyse how much the individual would be willing to pay to avoid the policy measure and the corresponding utility decrease, a new expenditure level E_2 must

[3] Figure 1 and its description follow Perman et al. (2003).

be drawn parallel to the initial level E_1 which intersects the new utility level U_1, where q_x is q_x^0. The distance between the two expenditure levels E_0 and E_2 equals the amount of money the individual would have to spend to achieve the initial utility level U_0 after the policy change, so it represents the ES.

When designing a CV study, it is important to consider whether the marginal or the total WTP is captured. The marginal WTP for a quantity change of a public good can be found by differentiating the expenditure function so it equals the Hicksian compensated inverse demand function (Pommerehne, 1987):

$$ES = \frac{\partial E}{\partial q_x} = E_{q_x}\left(p_y, U^1, q_x\right) \tag{4}$$

In this study the total WTP, which equals the sum of the marginal WTPs, is of interest. It can be shown by the path-dependent integral

$$ES = \int_{q_x^0}^{q_x^1} E(p_y, U^1, q_x)\, dq_x \tag{5}$$

The functional connections show that the WTP captured in CV studies can serve as a measure for utility.

3 Survey and methodology

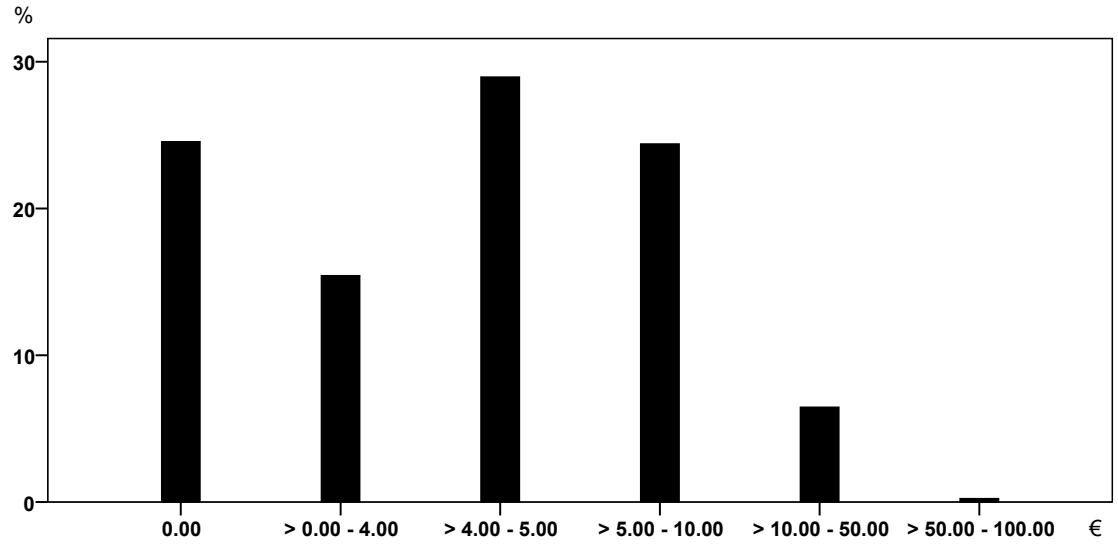
The aim of the survey was to determine respondents' WTP for the municipal supply of cultural goods in Lueneburg. The supply includes a theatre, three museums, a music school, two libraries, an education centre for experimental music, a town museum, a centre for the promotion of literature, a series of classical concerts and temporary art exhibitions, a centre for cultural performances, and measures for the preservation of ancient monuments and buildings. Since the town is comparatively small (about 71.000 inhabitants), it can be assumed that most of the cultural facilities presented in the questionnaire are well known to the respondents. The population of this survey were all inhabitants of the city of Lueneburg who were 18 years old or older. Questionnaires containing a CVM scenario were sent to a random sample of 5,000 people provided by

the registration office. Out of the 4,696 letters which could be delivered[4], about 30% (1,447) were filled out and returned.

The scenario includes the implementation of a monthly contribution paid to the town. The amount of this hypothetical contribution will be calculated as the average of all stated WTP amounts so that it is independent of the respondents' income level. It displaces the part of taxes which had been expended for cultural goods. Thus, if the average WTP of all respondents were equal to or lower than the actual tax burden for these goods, the contribution would not imply an additional financial burden.

The chosen elicitation method is a set of presented € amounts. The respondents were asked to mark the amount they would be willing to pay for the supply of cultural goods in Lueneburg. The NOAA panel argued that this elicitation method "is likely to create anchoring and other forms of bias" (Arrow et al., 1993) so, to reduce those effects, the € amounts were widely ranged in order to avoid giving a clue about what could be the expected or socially acceptable value. Moreover, the set of € amounts was followed by an open-ended question to grant the respondents an option to specify their previously stated amount, although only 3% answered the follow-up question.

Figure 2: Distribution of the stated WTP € amounts in %



To avoid establishing false incentives, the survey informed respondents that the supply of cultural goods would be restricted if the average WTP were lower than the actual

[4] Most of the remaining letters could not be delivered because people did not notify their change of address at the registration office.

amount spent on cultural goods. Thus, the amount the respondents would have to pay is contingent on the stated WTP, which offers incentives to behave strategically. Nevertheless, the impact of a single stated WTP amount on the amount of the contribution is comparatively small, so that the incentives should be "weak to moderate" (Mitchell/Carson 1990). However, it implies that respondents need information about how much is paid at the moment (4.70 € per month and capita of the population), which can cause a strong anchoring bias. Figure 2 shows the distribution of the stated WTP amounts. It is apparent that there is a strong anchoring bias since more than 27% of all respondents stated a WTP value that range between 4.00 and 5.00 €, which is very close to 4.70 €. Nevertheless, it is important to provide the status quo in order to enable respondents to consider whether they prefer to spend more or less for this good. Moreover, information such as this is given in comparable non-hypothetic situations, such as public referenda (e.g., Frey/Pommerehne, 1990 or Schulze/Ursprung, 2000).[5]

4 The empirical model

Since the idea is to explore the factors associated with the respondents' preferences for the cultural municipal supply in Lueneburg, the dependent variable in the empirical model is the stated WTP. The first group of independent variables in the model refers to the use value and the non-use values. A dummy variable, "indicator use value", which divides the respondents into users and non-users, captures the use value generated by cultural goods. The non-user group is defined as respondents who have not visited one of the museums, the theatre, one of the libraries, an art exhibition or a concert within a year from the date of the survey. Non-users also do not participate actively in the town's cultural life, e.g., in a development association of a museum or in a choir. Since Hamburg is easily accessible from Lueneburg and offers a wide range of high-quality cultural facilities, its cultural supply presents an alternative to the supply of Lueneburg. This substitutive relationship can decrease the use value related to cultural goods in Lueneburg, so a dummy for using cultural facilities in Hamburg is included. In the survey, the respondents were given four statements concerning possible non-use values attributed to the supply of cultural goods and were asked to state their level of

[5] For a more detailed discussion, see, for example, Hansen (1997).

agreement with these statements on a given scale. The four values were averaged for each respondent in order to capture the all-over acceptance of the non-use concept. This variable is included in the model as an indicator of the non-use values attributed to the municipal supply of cultural goods.

The second group of independent variables are dummies for the general interest for culture (medium interest, high/very high interest). The last group of independent variables in this model consists of socio-economic and socio-demographic variables, namely, the respondents' sex, age group, employment status, highest educational achievement, income level and household size. Non-response to required questions relevant to the model's variables reduced the number of qualified surveys to 1,062.

5 Descriptive results

The fraction of zero-bids of all respondents who stated a WTP amount is presented in Table 1. One-fourth of the 1,316 WTP amounts stated in the survey were zero-bids. If the respondents stated a WTP equal to zero, they were asked for the reason in a follow-up question. 14% of them answered that they were generally not interested in cultural goods, while nearly 70% reported that they are already paying enough taxes and other contributions. Regarding the latter group of respondents, it is not certain that they have a WTP equal to zero; their WTP may be positive but, because of the payment vehicle offered in the scenario, they stated a zero-bid. Thus, the fraction of zero-bids could decrease if, for example, voluntary donations instead of a contribution were proposed[6] and the more accurate fraction of zero-bids could be smaller than one-fourth.

Table 1: Zero-bids

Fraction of zero-bids	N° of observations (percent of all stated WTP amounts)
WTP > 0	993 (0.75)
WTP = 0	323 (0.25)
Reasons for a WTP = 0	**N° of observations (percent of all zero-bids)**
Generally no interest	46 (0.14)
Already paying enough taxes and contributions	225 (0.70)

[6] The guideline proposed by Bates et al. says that a payment vehicle should be used "which is likely to be employed in a real world decision"; therefore, in this survey, a coercive contribution was chosen (Bateman et al. 2002). Although it is not compatible with the German municipal law, the contribution approximates the taxes spent on cultural subsidies.

Table 2 presents some basic descriptive results for the variables used in the model. The mean of the WTP regarding the complete sample is 5.63 €, which is significantly higher than the 4.70 € amount given for subsidies, but which is the product of a wide spread of response, from 0 € to 100 €. Only one respondent stated a WTP > 100 €. As the amount was not specified in the follow-up question, the answer is not considered in further analysis.

Table 2: Descriptive Statistics, complete sample

Variables	No of observ.	Mean	Std. Dev.	Minimum	Maximum
WTP in €	1316	5.63	7.2858	0	100
User (1 = yes)	1447	0.8397	0.3670	0	1
Female (1 = yes)	1439	0.5650	0.4959	0	1
26 – 35 years old (1 = yes)	1441	0.1867	0.3898	0	1
36 – 55 years old (1 = yes)	1441	0.3602	0.4802	0	1
56 years and older (1 = yes)	1441	0.3400	0.4739	0	1
Self-employed (1 = yes)	1413	0.0849	0.2789	0	1
Civil servant (1 = yes)	1413	0.0913	0.2881	0	1
Employee (1 = yes)	1447	0.3386	0.4734	0	1
Trainee/Student (1 = yes)	1447	0.1285	0.3348	0	1
Housewife/Househusband (1 = yes)	1413	0.0665	0.2493	0	1
Pensioner (1 = yes)	1413	0.2435	0.4293	0	1
Unemployed (1 = yes)	1447	0.0346	0.1827	0	1
Lower education (1 = yes)	1386	0.3939	0.4888	0	1
Higher sec. schooling (1 = yes)	1386	0.2330	0.4229	0	1
University degree (1 = yes)	1386	0.3716	0.4834	0	1
Income < 1999 € (1 = yes)	1244	0.5338	0.4991	0	1
Income 2000 – 2999 € (1 = yes)	1244	0.2211	0.4151	0	1
Income 3000 – 3999 € (1 = yes)	1244	0.1463	0.3536	0	1
Income > 4000 € (1 = yes)	1244	0.0989	0.2986	0	1

Nearly 84% of all respondents were users of cultural goods, which means that they either attended one of the listed cultural goods at least one time during the previous year or they participated actively in the town's cultural life in the previous year.[7] The remaining 16% could consume private cultural goods, like CDs, books, private theatre

[7] Between 36% (art exhibition) and 59% (theatre) used cultural goods at least once, and 14% participated actively in the town's cultural life.

attendance or other public cultural goods, such as the municipal supply of other cities, e.g. Hamburg. Nevertheless, they did not report using the goods which should be valuated in this study so, in the context of this study, they are defined as non-users.

Table 3: Descriptive Statistics, compared for users and non-users

Variables	Mean users	Mean non-users	P-value
WTP in €	6.08	3.14	0.0000
Female (1 = yes)	0.5742	0.5209	0.1514
26 – 35 years old (1 = yes)	0.1957	0.1495	0.0878
36 – 55 years old (1 = yes)	0.3724	0.3084	0.0650
56 years and older (1 = yes)	0.3287	0.3692	0.2577
Self-employed (1 = yes)	0.0879	0.0725	0.4359
Civil servant (1 = yes)	0.0980	0.0580	0.0305
Employee (1 = yes)	0.3528	0.2837	0.0413
Trainee/Student (1 = yes)	0.1253	0.1535	0.2869
Housewife/Househusband (1 = yes)	0.0595	0.1063	0.0388
Pensioner (1 = yes)	0.2353	0.2609	0.4394
Unemployed (1 = yes)	0.0330	0.0465	0.3766
Low education (1 = yes)	0.3701	0.5327	0.0000
Higher sec. schooling (1 = yes)	0.2326	0.2312	0.9645
University degree (1 = yes)	0.3964	0.2312	0.0000
Income < 1999 € (1 = yes)	0.5146	0.6529	0.0006
Income 2000 – 2999 € (1 = yes)	0.2263	0.1941	0.3309
Income 3000 – 3999 € (1 = yes)	0.1549	0.0882	0.0069
Income > 4000 € (1 = yes)	0.1042	0.0647	0.0624

To explain the WTP in more detail, the differences between the means of the users and the non-users the municipal supply of cultural goods in Lueneburg are presented in Table 3. As the latter group stated they did not use one of the listed cultural facilities, they should not attribute a direct-use value to the municipal supply; even so, 55% of the non-users stated a positive WTP, which can be explained by non-use values. The mean WTP of the non-users was 3.14 €, which is significantly lower than the mean WTP of the users. However, if the users had non-use values of the same size, the non-use values would constitute over 50% of the users' total mean WTP.

The user group was made up of significantly more civil servants and employees than the non-user group, a finding which may be related to the relatively stable income

situation of these two occupational categories. By contrast, the proportion of housewives and househusbands was significantly smaller in the user group. The two groups also differ in educational and income levels; 53% of the non-users reported no or low educational achievement, which is significantly less education than that reported by the user group, and a significantly lower proportion of non-users reported having a university degree. These findings suggest a lower level of cultural education, leading to a lower level of cultural use. Similar results on income level may also explain lower levels of cultural use. The non-users have a significantly higher proportion of respondents with an income level less than 2000 € and a lower proportion in the two highest income groups compared to the users. These results confirm the current hypotheses in cultural economics that a lower income level, as well as a lower education level, is negatively correlated with the use of (and, therefore, the WTP for) cultural goods (see, for instance, Frey/Pommerehne, 1990, Withers, 1980 or Dickinson, 1997).

6 Multivariate results

This section presents the results of the multivariate analysis. The empirical model presented in section 4 is first estimated by OLS, followed by a Tobit regression. In a last step, a quantile regression is applied and the results are compared with those of the other methods. The intention of the multivariate analysis is to identify factors associated with the respondents' WTP. All regression estimates are based on 1,062 observations.

The results of the OLS regression[8] show that only a few variables have a significant influence on the WTP. In accordance with the theory of cultural economics, the results show that higher indicators for individual use value, as well as for non-use values, *ceteris paribus* lead to a higher WTP for the municipal supply in Lueneburg. Therefore, it is possible to detect non-use values, even though they cannot be captured by the competitive market. In the survey, the non-use values were captured on an ordinal scale, which makes it difficult to reveal the correct scope of the non-use values. Still, compared to those respondents who have no educational achievement or have not completed higher secondary schooling (Abitur), the respondents with a university degree have a significant higher WTP. The results also

[8] The OLS regression model was estimated with robust standard errors.

show significant impact on the stated WTP amounts by the three income levels above 2000 €, compared to those below this income level.

Table 4: Results for different regression models of the WTP for cultural goods in Lueneburg

	Model 1 OLS regression	Model 2 Tobit regression	Model 3 Median regression
Indicator use value	1.080 (0.041)	1.598 (0.048)	1.125 (0.017)
Attendance at cultural activities in Hamburg	0.311 (0.151)	0.462 (0.142)	0.040 (0.890)
Indicator non-use values	0.761 (0.000)	1.328 (0.000)	0.685 (0.000)
Medium interest	0.600 (0.312)	1.323 (0.066)	1.107 (0.026)
High/very high interest	1.124 (0.098)	1.828 (0.025)	1.416 (0.008)
Female	0.374 (0.404)	0.580 (0.273)	-0.084 (0.771)
26 – 35 years old	1.905 (0.146)	2.018 (0.051)	0.060 (0.914)
36 – 55 years old	1.489 (0.225)	1.459 (0.193)	-0.597 (0.343)
56 years and older	1.433 (0.248)	1.191 (0.352)	-0.717 (0.316)
Self-employed	1.534 (0.066)	1.602 (0.093)	1.324 (0.062)
Civil servant	-0.132 (0.823)	-0.289 (0.742)	0.002 (0.997)
Trainee/student	1.823 (0.087)	2.141 (0.040)	-0.332 (0.543)
Housewife/househusband	-0.190 (0.830)	-0.012 (0.992)	0.506 (0.414)
Pensioner	0.382 (0.545)	0.286 (0.758)	-0.051 (0.913)
Unemployed	-0.691 (0.342)	-1.425 (0.305)	-1.094 (0.071)
Higher secondary schooling	0.760 (0.122)	1.129 (0.136)	0.399 (0.353)
University degree	1.191 (0.010)	1.829 (0.004)	0.668 (0.032)
Income 2000 – 2999 €	1.201 (0.026)	1.624 (0.018)	0.913 (0.026)
Income 3000 – 3999 €	1.108 (0.059)	1.676 (0.030)	0.994 (0.026)
Income > 4000 €	1.883 (0.012)	2.002 (0.032)	1.694 (0.017)
N° adults living in household	0.181 (0.595)	0.181 (0.513)	0.220 (0.160)
N° children living in household	0.274 (0.363)	0.299 (0.221)	0.050 (0.735)
Constant	-4.139 (0.020)	-10.205 (0.000)	-1.996 (0.048)
N° of observations	1062	1062	1062
R^2	0.0907		
Pseudo R^2		0.0222	0.0560

P-values are reported in parentheses behind the coefficient estimate.

The Tobit regression is applied to validate the results of the OLS estimation. As Tobit models are used in the event of censored dependent variables, a Tobit regression is often

applied in CV studies where the WTP is limited at zero (e.g., Mourato et al., 2002 or Hansen, 1997). However, Tobit models cannot be used for predictions about concrete values of WTP as they can result in negative values for the WTP (see Hansen, 1997). All significant coefficients of the OLS model are validated by the Tobit model, and the estimation indicates *ceteris paribus* a significantly higher WTP for respondents who stated medium, high or very high interest in culture in general, compared to those who stated low or no interest in culture. Although these results may appear trivial, they validate the respondents' self-assessment regarding their preferences for culture and cultural goods. Finally, the Tobit model indicates a significantly higher WTP for trainees and students compared to employees, all other factors remaining the same. This may be explained by the fact that trainees and students normally have more leisure time than other employees.

The third model used in the multivariate analysis is a quantile regression model. While the OLS and the Tobit regression models include the squared residuals, the coefficients for the quantile regression are obtained by minimising the sum of residuals, which makes the model more insensitive to outliers. Therefore, a quantile regression is important for this analysis, as nearly 94% of all results in the study's data set lie between 0 € and 10 €, whereas the total span lies at 100 € (see Figure 2). Moreover, the quantile regression provides the opportunity to compare the coefficients at different points of the distribution. In addition to the quartiles (0.25, 0.50, 0.75), the 0.90 quantile is analysed because the coefficients' impact on higher WTP amounts is of particular interest.

Table 5: Distribution of the WTP over the quantiles

Quantile	0.25	0.50	0.75	0.90
WTP in €	1.00	5.00	7.50	10.00

Table 5 shows the different quantiles and the corresponding WTP amounts. The results of the median regression (at the 0.50 point of the distribution) listed in Table 4 confirm the results of the OLS regression and, for the most part, the Tobit regression, which refers to the empirical validity of these results.

In comparing the results over the different quantiles, only the coefficient for the variable "high or very high interest for culture in general" is statistically significant over all analysed quantiles. Although the coefficients are rising over the quantiles for all but

the 0.50 quantile, the relative impact on the WTP amount decreases. The coefficient for the medium interest-variable is significant only for the 0.25 and 0.50 quantile, which is consistent with previous results, as it can explore only factors associated with lower WTP amounts.

Table 6: Results for the quantile regression of the WTP for cultural goods in Lueneburg

	Quantile Regression			
	0.25	0.50	0.75	0.90
Indicator use value	1.1109 (0.007)	1.125 (0.017)	1.0415 (0.135)	-0.1875 (0.893)
Attendance at cultural activities in Hamburg	0.0653 (0.654)	0.040 (0.890)	0.6306 (0.134)	0.375 (0.619)
Indicator non-use values	0.7262 (0.000)	0.685 (0.000)	0.8168 (0.000)	0.175 (0.657)
Medium interest	0.8678 (0.027)	1.107 (0.026)	1.0525 (0.065)	0.4875 (0.596)
High/very high interest	1.4755 (0.002)	1.416 (0.008)	1.9315 (0.010)	2.225 (0.044)
Female	0.1360 (0.681)	-0.084 (0.771)	-0.3778 (0.346)	-0.1938 (0.805)
26 – 35 years old	0.4778 (0.407)	0.060 (0.914)	1.2543 (0.098)	2.6375 (0.054)
36 – 55 years old	0.4846 (0.435)	-0.597 (0.343)	0.5743 (0.485)	2.4563 (0.062)
56 years and older	0.4005 (0.545)	-0.717 (0.316)	0.4808 (0.634)	2.5438 (0.179)
Self-employed	0.4206 (0.509)	1.324 (0.062)	0.6433 (0.330)	1.35 (0.645)
Civil servant	-0.1996 (0.641)	0.002 (0.997)	-0.1751 (0.792)	-0.0438 (0.972)
Trainee/student	0.2816 (0.605)	-0.332 (0.543)	0.4501 (0.610)	2.9125 (0.099)
Housewife/househusband	-0.6622 (0.343)	0.506 (0.414)	-0.0384 (0.962)	-0.0875 (0.957)
Pensioner	-0.8979 (0.055)	-0.051 (0.913)	0.1130 (0.889)	0.1813 (0.911)
Unemployed	-0.7032 (0.213)	-1.094 (0.071)	-0.5200 (0.676)	-0.5875 (0.810)
Higher secondary schooling	0.8004 (0.066)	0.399 (0.353)	0.7422 (0.207)	0.0188 (0.984)
University degree	1.2008 (0.001)	0.668 (0.032)	0.7878 (0.114)	0.2563 (0.783)
Income 2000 – 2999 €	0.8768 (0.054)	0.913 (0.026)	1.4939 (0.003)	1.8313 (0.077)
Income 3000 – 3999 €	1.2336 (0.003)	0.994 (0.026)	1.9722 (0.001)	1.8438 (0.064)
Income > 4000 €	1.0317 (0.049)	1.694 (0.017)	2.0774 (0.002)	4.7875 (0.082)
N^{o} adults living in household	0.1730 (0.311)	0.220 (0.160)	0.0470 (0.830)	-0.1063 (0.858)
N^{o} children living in household	-0.0176 (0.904)	0.050 (0.735)	0.0494 (0.807)	0.4063 (0.634)
Constant	-5.1556 (0.000)	-1.996 (0.048)	-1.4577 (0.362)	4.2063 (0.172)
N^{o} of observations	1062	1062	1062	1062
Pseudo R^2	0.1277	0.0560	0.0857	0.0200

P-values are reported in parentheses behind the coefficient estimate.

The indicator for the use value has an impact on the WTP up to the 0.50 quantile and is similar in magnitude to the coefficients of the OLS and the Tobit models. Compared to this, the estimated coefficients for the indicator of the non-use values are significant at an error level of 0% for the 0.25, 0.50 and the 0.75 quantiles. The estimated coefficients for both indicators are similar in magnitude, which suggests a decreasing relative impact on the WTP.

Having a university degree has an impact on the WTP at the 0.25 and the 0.50 quantile, decreasing about 50% between these two points. Given that over 24% of the respondents stated a WTP equal to zero, the 0.25 quantile can be interpreted as the critical point regarding the decision for or against a positive WTP. Therefore, having completed higher secondary schooling seems to have an impact on the decision for a positive WTP but has no relevant impact on the amount of the WTP.

Among those in the income class of 2000 – 2999 €, there is an impact for the 0.50 and the 0.75 quantiles, compared to the base category of income of under 2000 €. For the income classes of 3000 – 3999 € and 4000 € and more, there are significant coefficients for all but the 0.90 quantile, compared with the base category. While the coefficients within the latter group double over the three quantiles, the relative impact on the WTP decreases. The explanation for this may be that lower incomes represent a financial constraint in the consumption of cultural goods. As income rises, this constraint relaxes, which results in a decreasing impact on the WTP.

Overall, the findings suggest that, the higher the WTP, the less the quantile regression model is able to explore influencing factors. This is reflected in the decreasing number of significant coefficients and in the coefficients' decreasing relative impact on the WTP amounts. Therefore, as most of the variables included in the model refer to socio-economic and socio-demographic characteristics, they have a bearing on zero-bids and low WTP amounts, but almost none on higher WTP amounts.

Regarding distribution, the null-hypothesis, that the coefficients are equal between pairs of quantiles and across all quantiles, cannot be rejected for almost all findings (see appendix). The absence of heterogeneity points to the empirical validity of the OLS estimators.

7 Conclusion

This paper studied the WTP for cultural goods using the example of the municipal supply of cultural goods in Lueneburg, Germany. For this purpose, a dataset of 1,447 questionnaires was analysed using descriptive statistics as well as OLS, Tobit and quantile regression models.

First, the results of the survey, particularly the means, suggest that the population of Lueneburg agrees with the amount spent on the municipal supply of cultural goods by the public authorities. Moreover, the existence of non-use values could be detected because the mean WTP of the non-users is positive and because the acceptance levels of statements concerning possible non-use values attributed to the supply of the town's cultural facilities is very high. These results indicate the existence of positive external or non-use effects which can legitimate economically the subsidies paid by the public authorities. However, because of methodological problems, like the anchoring bias, it is doubtful that the CVM can generate specific data in this area.

The multivariate analysis provides some clues to the question of whether the method can explore factors associated with WTP amounts. Higher education levels as well as higher income classes are positively correlated with higher WTP amounts across all three regression models, which points to the empirical validity of the results. Nevertheless, when results of the three regression models are compared, findings for some variables differ considerably in magnitude. Further, as demonstrated by the quantile regression, the higher the WTP, the less the quantile regression model is able to explore influencing factors. This is reflected in the decreasing number of significant coefficients and in the decreasing relative impact on the WTP amounts. Therefore, the model does not fit well for higher WTP amounts. Overall, the results of the multivariate analysis provide positive support to the suggestion that the CVM can provide valid results about preferences for cultural goods. Therefore, the method can provide important information about policy decisions, although a number of methodological problems remain.

This study is a first step in our work on analysing preferences for cultural goods. As it is possible to capture the approximate use value of most cultural goods, e.g., by paid ticket prices, the next steps will be concerned with a more detailed analysis of non-use values.

References

Alberini, A./ Longo, A. (2005), The Value of Cultural Heritage Sites in Armenia: Evidence from a Travel Cost Method Study. Fondazione Eni Enrico Mattei. Notadi lavoro, 112.

Arrow, K./ Solow, R./ Portney, P. R./ Leamer, E. E./ Radner, R./ Schuman, H. (1993), Report of the NOAA Panel on Contingent Valuation. U.S. Federal Register 58(10), 4601-4614.

Bateman, I. J./ Carson, R. T./ Day, B./ Hanemann, M./ Hanley, N./ Hett, T./ Jones-Lee, M./ Loomes, G./ Mourato, S./ Özdemiroğlu, E./ Pearce, D. W./ Sudgen, R./ Swanson, J. (2002), Economic Valuation with Stated Preference Techniques. Cheltenham/ Northampton (Edward Elgar).

Bateman, I. J. (1992), The Economic Evaluation of Environmental Goods and Services. Integrated Environmental Management, 14, 11-14.

Boter, J./ Rouwendal, J./ Wedel, M. (2005), Employing Travel Time To Compare the Value of Competing Cultural Organizations. Journal of Cultural Economics, 29, 19-33.

Carson, R. T./ Mitchell, R. C./ Conaway, M. B. (2002), Economic Benefits to Foreigners Visiting Morocco accruing from the Rehabilitation of the Fes Medina. In: Navrud, S./ Ready R. C. (eds.): Valuing Cultural Heritage. Cheltenham/ Northampton (Edward Elgar).

Coelli, T./ Lloyd-Smith, J./ Morrison, D./ Thomas, J. (1991), Hedonic Pricing for a Cost Benefit Analysis of a Public Water Supply Scheme. The Australian Journal of Agricultural Economics, 35, 1-20.

Deutscher Buehnenverein, Bundesverband der Theater und Orchester (2006), Theaterstatistik 2004/2005, Deutschland, Oesterreich, Schweiz. Koeln (Peipers).

Dickinson, V. (1997), Museum Visitor Surveys: An Overview, 1930 – 1990. In: Towse, R. (ed.), Cultural Economics: The Arts, the Heritage and the Media Industries. Vol. 1. Cheltenham/ Northampton (Edward Elgar).

Frey, B. S./ Lüchinger, S./ Stutzer, A. (2004), Valuing Public Goods: The Life Satisfaction Approach. CESifo Working Paper, No. 1158.

Frey, B. S./ Pommerehne W. W. (1990), Muses and Markets. Oxford (Blackwell).

Hansen, T. B. (1997), The Willingness-to-Pay for the Royal Theatre in Copenhagen as a Public Good. Journal of Cultural Economics, 21, 1-28.

Institut für Museumsforschung (2006), Statistische Gesamterhebung an den Museen der Bundesrepublik Deutschland für das Jahr 2005. Paper N° 60, Berlin.

Mitchell, R. C./ Carson, R. T. (1990), Using Surveys To Value Public Goods: The Contingent Valuation Method. Washington, D. C. (Resource of the Future).

Mourato, S./ Kontoleon, A./ Danchev, A. (2002), Preserving Cultural Heritage in Transition Economics: A Contingent Valuation Study of Bulgarian Monasteries. In: Navrud, S./ Ready R. C. (eds.): Valuing Cultural Heritage. Cheltenham/ Northampton (Edward Elgar).

Navrud, S./ Ready R. C. (2002), Valuing Cultural Heritage. Cheltenham/ Northampton (Edward Elgar).

Nicholson, W. (2005), Microeconomic Theory. Mason etc. (Thomson South-Western).

Papandrea, F. (1999)**,** Willingness To Pay for Domestic Television Programming. Journal of Cultural Economics, 23, 149-166.

Perman, R./ Ma, Y./ McGilvray, J./ Common, M. (2003), Natural Resource and Environmental Economics. 3rd ed., Harlow (Pearson).

Pommerehne, W. (1987), Präferenzen für öffentliche Güter. Tuebingen (Mohr-Siebeck).

Santagata, W./ Signorello, G. (2000), Contingent Valuation of a Cultural Public Good and Policy Design: The Case of "Napoli Musei Aperti". Journal of Cultural Economics, 24, 181-204.

Schulze, G. G./ Ursprung, H. W. (2000), La donna e mobile – or Is She? Public Choice, 102 , 131–149.

Statistische Aemter des Bundes und der Laender (2006), Kulturfinanzbericht 2006. Wiesbaden (Statistisches Bundesamt).

Throsby, C. D./Withers, G. A. (1983), Measuring the Demand for the Arts as a Public Good: Theory and Empirical Results. In: Hendon, W. S./ Shanahan, J. L. (eds.), Economics of Cultural Decisions. Cambridge (Abt Books), 177-191.

Vanslembrouck, I./ Van Huylenbroeck, G./ Van Meensel, J. (2005), Impact of Agriculture on Rural Tourism: A Hedonic Pricing Approach. Journal of Agricultural Economics, 56, 17-30.

Welsch, H. (2007), Environmental Welfare Analysis: A Life Satisfaction Approach. Ecological Economics, 62, 544-551.

Withers, G. A. (1980), Unbalanced Growth and the Demand for Performing Arts: An Econometric Analysis. Southern Economic Journal, 46, 735-742.

Appendix: Tests of parameter equality across quantiles

	High/very high interest	Medium interest	Indicator use value	Indicator non-use value	Att. cultural activities in HH	Female	26 – 35 years old	36 – 55 years old	56 years and older	Self-employed	Civil servant
0.25 vs. 0.50	0.9026	0.5599	0.9749	0.7390	0.9150	0.4655	0.4232	0.0682	0.0910	0.1832	0.6635
0.25 vs. 0.75	0.5509	0.7542	0.9227	0.6411	0.1613	0.2530	0.3143	0.9156	0.9376	0.7700	0.9716
0.25 vs. 0.90	0.5067	0.6856	0.3486	0.1518	0.6714	0.6882	0.1162	0.1312	0.2469	0.7470	0.9017
0.50 vs. 0.75	0.4278	0.9190	0.8917	0.4243	0.1027	0.3926	0.0708	0.1129	0.1688	0.2957	0.7672
0.50 vs. 0.90	0.4460	0.5048	0.3130	0.1562	0.6329	0.8843	0.0491	0.0164	0.0675	0.9926	0.9700
0.75 vs. 0.90	0.7572	0.4834	0.2978	0.0412	0.6712	0.7932	0.2389	0.0907	0.1711	0.7950	0.9041
Joint test	0.8437	0.8540	0.7692	0.1784	0.4123	0.7151	0.1571	0.0489	0.1197	0.5208	0.9695

	Trainee/ Student	Housewife/ -husband	Pensioner	Unemployed	Higher sec. schooling	University degree	Income 2000 – 2999 €	Income 3000 – 3 999 €	Income > 4000 €	N° adults living in hh	N° children living in hh
0.25 vs. 0.50	0.2500	0.0776	0.0694	0.5043	0.3625	0.1144	0.9342	0.5934	0.2899	0.7810	0.6657
0.25 vs. 0.75	0.8491	0.4952	0.2279	0.8777	0.9273	0.4390	0.2850	0.2573	0.1294	0.5919	0.7519
0.25 vs. 0.90	0.1386	0.7322	0.5070	0.9618	0.4284	0.3154	0.3683	0.5539	0.1647	0.6381	0.6179
0.50 vs. 0.75	0.3217	0.4501	0.8146	0.5938	0.5189	0.7837	0.1904	0.0661	0.5379	0.3426	0.9981
0.50 vs. 0.90	0.0597	0.7106	0.8798	0.8287	0.6883	0.6445	0.3716	0.3965	0.2365	0.5699	0.6734
0.75 vs. 0.90	0.1113	0.9736	0.9604	0.9738	0.3837	0.5217	0.7139	0.8900	0.2831	0.7782	0.6602
Joint test	0.1989	0.3330	0.3390	0.8764	0.5971	0.3996	0.5873	0.3226	0.3730	0.7973	0.9416