

More is not always preferred to less: evidence from the use of a public bad in a tax reallocation scheme to value marine ecosystem services in the West Black Sea

Fikret Adaman^a, Phoebe Koundouri^b, Paulo A.L.D. Nunes^c, Kyriaki Remoundou^b

^a Department of Economics, Bogazici University, Istanbul-Turkey-34342

^b Department of International and European Economic Studies, Athens University of Economics and Business, 76 Patission Street, Athens 104 34, Greece

^c Department of Economics, University of Venice and Fondazione Eni Enrico Mattei, Campo S. Maria Formosa, Castello 5252, 30122 Venice, Italy

Abstract

This paper explores the use of a reallocation of the existing public budget scheme as the payment vehicle in a valuation exercise aiming to elicit public preferences for a marine rehabilitation program and examines whether valuation estimates are sensitive to different public budget sources. A split sample approach was used with the two treatments differing only with respect to the alternative public good whose expenditures reduction from the national budget would finance the environmental program under evaluation. Results suggest that, in the context of this study, the alternative public good in the tax reallocation scheme influences preference formation. More interestingly, when respondents perceive the alternative good, whose budget is to be reduced to finance the marine program under evaluation a public bad, a Pareto improvement is achieved through the redistribution of tax revenues. Although the inclusion of a public good perceived as a bad in the reallocation scheme does not allow for welfare estimates to be elicited, the relative ranking of the attributes of the good under evaluation are estimated. Formal testing revealed that the marginal rate of substitution between attributes is also affected by the choice of the alternative public good. Speculations as to what drives the results and implications for future valuation studies are discussed.

Key words: payment vehicle, tax reallocation, public bad, choice experiment, marine resources.

Aknowledgements:

Authors would like to deeply thank Prof Duygu Avci (Bogazici University, Turkey), Dr Olga Diukanova (Fondazione Eni Enrico Mattei, Venice) and Dr Liliya Salomatina (Institute of industrial economics of national academy of sciences of Ukraine) for their assistance in questionnaire translation and survey implementation. All errors, however, remain our own.

1. Introduction

It is well documented in the stated preferences literature that the payment vehicle is an important feature of the valuation scenario and therefore the selection of the appropriate payment mechanism presents a challenge for the stated preferences practitioners (Mitchell and Carson 1989, Stevens et al 1997, Morrison et al. 2000). Economic values inferred from valuations studies are found to be sensitive to the payment instrument, its duration and its periodicity/frequency. The NOAA panel, the state-of-the-art guidelines in valuation studies, explicitly states that the proposed payment vehicle should be seriously taken by respondents if valid welfare estimates are to be elicited (Arrow et al. 1993). Typically in stated preference applications the payment vehicle employed is a specific tax aiming to raise funds for the provision of the good under evaluation. Under standard taxes, willingness to pay measures are elicited, being the amount of income the respondent is willing to pay to forgo for an improvement in the quality/quantity of the good under evaluation. However, there is ample empirical evidence of payment biases associated with mandatory payment schemes such as taxes. Payment biases arise when respondents object the payment vehicle used in the valuation scenario and thus either react strategically, by not revealing truthfully their preferences, or protest against the valuation exercise by stating zero value for the proposed good (Mitchell and Carson 1989, Morrison et al. 2000)

To address the payment vehicle bias problem and derive informed policy recommendations, alternative payment mechanisms have been applied and their effects on preference elicitation and valuation have been examined (Champ et al. 2001). Recently, tax reallocation schemes under which the finance of the project

under evaluation is undertaken through a reallocation of money currently spent on other public goods are introduced in the stated preferences literature (Bergstrom et al. 2004, Kontoleon et al 2006, Nunes and Travisi 2009). In eliciting the value of the attributes of the public good under consideration, the tax reallocation literature assumes that there is a trade-off between the public good whose budget will be decreased to finance the increase in the quantity/quality of the public good under evaluation. Accordingly, the amount of the alternative good that people are willing to forgo for an increase in the quantity/quality of the good under evaluation provides a measure of the value people attach to the good. Given the unpopularity of new taxes, the redistribution of existing taxation is a highly appealing (plausible and non-objectionable) public policy instrument, and is often employed in real decision-making. Especially in light of the current financial crisis, rationalization of public expenditures through efficient utilisation and allocation of existing resources is urgently needed. The relative merits of a reallocation scheme as a payment instrument in valuation studies are even more pronounced in low-income countries where valid welfare estimations may be confounded by budget constraints. Respondents from lower income groups often protest against new taxes since they are unable to pay and/or feel it is unfair that additional tax loads are charged to poor people for the provision of the public good under consideration. 'I do not have enough money' and 'I already pay enough taxes' are among the most frequent reasons behind protest responses. Under such arguments, it may also not be in the strategic interest of respondents to truthfully reveal their preference. These above concerns motivated the adoption of a reallocation scheme in the present study.

Although there are several benefits associated with the use of reallocation schemes their use is not widespread mainly because the rather limited literature has not adequately addressed issues of validity. Reported results are contradicting as to whether valuation estimates differ under tax reallocation schemes and standard taxes. Bergstrom et al (2004) and Nunes and Travisi (2009) conclude that Willingness to Pay estimates are higher under a tax reallocation scheme whereas Kontoleon et al (2006) report insignificant differences in welfare estimates when reallocation schemes are compared to taxes. Authors suggest that findings may be case-study specific, thus more research is recommended to allow for robust conclusions to be reached to guide the future research in the payment instrument selection. Another major concern

relates to the validity of the results when different public goods are selected to be traded-off in the reallocation scheme. Bergstrom et al. (2004) and Kontoleon et al. (2006) have used ‘all other public goods’ as the alternative government-funded good. Nunes and Travisi (2009) are the first to formally test the effect of different public goods on individual valuations for a noise reduction program in Italy. Authors conclude that preferences are not sensitive to the choice of alternative good but results may be specific to the public goods considered in their study. Further investigation of the effect of the other good selected to be traded-off in a reallocation task on preferences is thus clearly needed.

Moreover, the implicit assumption in the literature employing a tax reallocation scheme is that people can trade-off between the public goods in the reallocation scheme. Equivalently, this implies that people hold value for increases in both goods. What if people consider the provision of the alternative public good in the reallocation task as welfare decreasing and thus the good exhibits features of a public bad? In such cases, we expect a welfare gain to be associated with a decrease in its provision. Consequently, there is no longer a trade-off between the goods, and thus the valuation task is not capable anymore of eliciting monetary values for the attributes of the good under evaluation. However, when considering alternative public goods, researchers are hardly aware of the value these goods entail for the respondents, if any, or of their potential public bad nature. We argue that this represents another challenge for the reallocation literature that needs to be enlightened.

This paper contributes to the tax reallocation literature by examining the effect that the choice of the public good whose public budget share will be reduced to finance the provision of the good under evaluation may have to individuals’ valuation. To this end, we use a split-sample approach to formally test whether the valuation estimates for a public good differ significantly under different sources of existing government revenues that the money to finance the proposed project is allocated from. The public good under evaluation is a regional marine rehabilitation project in the West Black Sea. Specifically, half of the sample was explained that the proposed marine project would be financed through a reduction of the national budget for renewable energy projects, whereas the other half was faced with a scenario stating that the project would be financed with money currently being spent for the training of the public

administration sector. Although not manifested in the focus groups, held before the survey was launched, the training of the public administration, considered in the second reallocation treatment, exhibits a public bad nature. The implications of this finding for the valuation exercise are discussed, and guidelines to future research in order to ensure a plausible reallocation scheme are offered.

Our work is similar to Nunes and Trivisi (2009) in that we explicitly specify the alternative public good to be traded off in the reallocation scheme; we are however extending their approach in three ways: a) we examine the effect of the funding source on valuation in a low-income environment b) we estimate models which explicitly account for unobserved heterogeneity in the sample and c) we examine the implications of including a public service considered as a public bad by respondents. To our knowledge this is the first valuation study considering a public bad in a reallocation scheme employed as the payment vehicle in a valuation study.

Our experiment was implemented in Turkey and Ukraine, two low-income states in transition process of developing and updating their national policies towards sustainable marine resources management and environmental protection. Although the primary aim of the paper is methodological, the results under this study may as well assist policy-makers in the countries bordering the West Shelf of the Black Sea in the implementation of the recently adopted European Marine Strategy Directive, which aims to achieve good environmental status for European marine waters by 2021.

2. The West Black Sea Valuation Study

2.1 Stating the problem

The Black Sea is among the largest inland water basins in the world sustaining a unique ecosystem, providing a variety of goods and services with value to humans. The last three decades the Black Sea ecosystem has witnessed a dramatic change due to pressures from human activities and natural processes (UNEP 2002, Black Sea Commission 2009). The almost entirely enclosed nature of the Sea has amplified the effects of climate change and anthropogenic forcing. Likewise, benefits for the coastal

populations from their interaction with the marine environment have been reduced. Although there are signs of recovery mainly in response to the implementation of EU environmental policies, the state of the environment in the western shelf continues to be a matter of concern due to ongoing degradation. There is decreasing transparency of Black Sea waters and there are regular beach closures due to insufficient treated sewage discharge problems. Nitrogen and phosphorus loading mainly from agricultural practices also affect water quality. Although there is evidence that nutrient concentrations are decreasing in the Black Sea, elevated concentration are observed along the West Coast due to excessive nutrient input from the river Danube.

Meanwhile, maritime pollution from the transportation of oil and other hazardous substances constitute a threat for public health. There are currently 28 pollution hot spots in the West Black Sea associated with high pollution levels, presenting a risk of contamination from waterborne diseases. Marine mammals such as dolphins and monk seals are critically endangered and small pelagic fish stocks have declined due to overfishing and destructive fishing practices. Moreover, alien species, introduced through uncontrolled deballasting from ships, are still a major cause of native biodiversity loss. The rate of alien species invasion reached a peak at the 1980s and 1990s but continues at a steady state today (EEA, 2007)

Governments in the bordering states are beginning to recognize the need for sustainable management of the marine resources, and various research and monitoring programmes are currently carried out in the Black Sea both at national and international level. Collaborative efforts under the auspices of international bodies such as the European Union have also been undertaken, which motivated our case study.

2.2. Data collection and experimental design

Our choice experiment survey was administered to two random samples of residents in the west Turkish and Ukrainian Coast of the Black Sea and elicited public preferences towards different marine management policies to improve water quality and biodiversity and reduce the risk of contracting water-related diseases in the West Black Sea Shelf. The survey was pretested in Turkey through face-to-face interviews

PRELIMINARY DRAFT, PLEASE DO NOT QUOTE

over a week time period in August 2009 and Ukraine in late September. Data collection took place from August to October 2009 through personal interviews by trained local partners. The implementation of the survey resulted in 472 usable questionnaires being collected, 312 in Ukraine and 160 in Turkey.

Focus groups feedback and scientific evidence guided the selection of attributes and their potential levels under different management options. Attributes employed and their levels are presented in table 1.

Respondents in both treatments were also asked about their attitudes towards renewable energy as well as their opinion on the necessity for public reforms in their countries. Perceptions on values from goods and services the Black Sea ecosystem supports were also elicited, while respondents were also asked to declare on four-point scale their level of trust on different institutions in charge of the implementation of the project. The choice task followed. An orthogonal fractional factorial design was used to generate 32 choice sets which were blocked in four versions for each split sample. Respondents were thus faced with eight choice cards, each asking them to state their preferred profile among two marine resources management options and a status-quo alternative. The status quo corresponded to the situation that would prevail in the Black Sea ecosystem in 2030 in the absence of any policy action. Visual aids were also used to ease comprehension. An example of a choice card is provided in figure 1. Photos and accompanying wording were carefully tested in the pilot survey to ensure respondents get a clear understanding. Cheap talk script asking respondents to keep in mind their disposable income and other payments they might be making for similar goods and services to reduce hypothetical bias was also included in the scenario. A number of debriefing questions to identify protest behaviour were also incorporated. In total 3 protestors were identified in the Renewable Energy sample and 12 in the Public Administration sample and were excluded from the final sample.

A follow-up question asking respondents to rate their perceived level of difficulty to accomplish the choice task was included given the unfamiliarity of people in the area with surveys. We then treated respondents with high-stated complexity as outliers and were then removed from the final sample given that complexity is likely to encourage respondents' applying simplifying heuristics when making choices and thus affects

choice consistency (Dhar and Simpson 2003, DeShazo and Fermo 2002). In total 15 respondents finding the task highly complex were excluded from the subsequent analysis in the Renewable energy treatment and 4 in the Public Reform.

Excluding protestors and respondents stating high-complexity level for the choice task we ended with 215 individuals in the Renewable Energy sample and 223 individuals for the Public Administration sample. While this sample size is not sufficient for generalizing the results in the West Black Sea shelf, it is adequate for the methodological purpose investigated in this study.

The last part of the questionnaire ascertained respondents' socio-demographic information, such as gender, age, level of education and household income. Formal testing revealed no statistical difference in the socioeconomic characteristics between the two splits but for the income. Thus, difference in preferences across the two treatments, if established, can be ascribed to the funding source. Table 2 reports the socioeconomic background of respondents in the two samples.

3. Alternative Public Good Effect Hypothesis and Treatments

The present valuation exercise explores the use of a reallocation of the existing public budget as a payment vehicle. Redistribution of existing public expenditures is often the way public goods are financed in real policy making, thus the payment vehicle is realistic, while concerns of strategic behaviour on behalf of respondents associated to new taxes are avoided. Strategic behaviour may arise when respondents hold concerns on the fairness of taxes introduction and thus understate their WTP. Protest beliefs are also common when taxes are employed as a payment vehicle. Inability to pay new taxes and the belief that existing taxation is already high are the most frequent reasons for payment refusal. Such concerns are mitigated when a tax reallocation scheme that does not assist to any additional tax pressure to the respondent is employed.

The tax reallocation task requires respondents to trade-off some amount of a public good or of a composite commodity of all other public goods, if the alternative public good is not specified, to obtain an improvement in the public good under evaluation. Bergstrom et al. (2004) introduce the notion of compensating tax reallocation (CTR),

analogous to compensating surplus under standard taxes, defined as the change in the provision of the alternative public good that holds the utility constant, given a change in the provision of the public good under evaluation. Formally, by using expenditure functions:

$$CTR = e(P, Q^0, Z^0, u^0) - e(P, Q^1, Z^1, u^0), \quad (1)$$

where e is the household expenditure required to attain the utility level u^0 , P is the price vector for the market goods, Q^0 and Z^0 are the initial levels of provision of the alternative public good and of the public good under valuation, respectively, Q^1 and Z^1 are the subsequent levels of provision after the reallocation, and u is the utility associated with the initial level of provision of all public goods. Given that a tax reallocation scheme does not affect household's disposable income (e^*), therefore, $e^*(P, Q^0, Z^0, u^0) = e^*(P, Q^1, Z^1, u^0)$, Bergstrom et al (2004) show that:

$$CTR = ((e^*(P, Q^0, Z^0, u^0) + Z^0) - (e^*(P, Q^1, Z^1, u^0) + Z^1)) \quad (2)$$

implying that (2) reduces to:

$$CTR = Z^0 - Z^1. \quad (3)$$

In the realm of this framework willingness to reallocate is the expenditure on the other public good respondents are willing to forgo in order to finance the good under evaluation. A standard assumption underlying this framework is that a trade-off in terms of utility is present when people sacrifice the quantity/quality of one public good to finance another. However, whether a public good exhibits feature of a bad or not is hardly known *a priori* to the researcher. In this paper we are interested in examining whether preferences are sensitive to the selection of the alternative public good in a valuation study employing a tax reallocation as a payment vehicle and further explore the implications for the valuation task when a public bad is considered as the alternative good.

PRELIMINARY DRAFT, PLEASE DO NOT QUOTE

In order to examine the influence of the funding sources on welfare estimated, two versions of the questionnaire were designed. The two treatments differed only with respect to the public good whose budget would be reduced to finance the marine rehabilitation program. Renewable energy projects and administrative reform projects were used respectively.

Specifically, the script in the case of renewable energy projects budget reduction read as follows:

*'To cover the cost of the marine restoration program described above, funds will be raised from the government purse in each country. In this case **no new taxes** will be introduced. Money will be reallocated to the marine program through a reduction in 2010 budget on renewable energy without any further taxation. Therefore, this money will no longer be available for financing renewable energy projects that would contribute to the increase of the share of renewable energy in the total energy mix in the countries of the West Black Sea.'*

Respectively, the script when part of the taxation currently being spent on administrative reform payments would be used to finance the marine program read as follows:

*'To cover the cost of the marine restoration program described above, funds will be raised from the government purse in each country. In this case **no new taxes** will be introduced. Money will be reallocated to the marine program through a reduction in 2010 budget on public administration training expenses in each country without any further taxation. Therefore, this money will no longer be available for financing training projects aim at improving civil servants' skills and productivity and at making them work more efficiently and able to support citizens better.'*

Our null hypothesis is that preferences do not differ across the two treatments.

Formally:

$$H_0 : \beta_{RE} = \beta_{PR}$$

$$H_1 : \beta_{RE} \neq \beta_{PR}$$

Rejection of the null would suggest that future valuation studies employing a payment reallocation scheme should be carefully designed with respect to funding sources proposed in the valuation scenario. Focus groups and pretesting should guide the selection of the alternative public good whose public budget reduction would finance the public policy under evaluation.

4. Econometric Results and Welfare Estimations

4.1 Model Specification

A Random Parameters Logit (RPL) model was used to analyse the choice data to allow for preference heterogeneity in the population. RPL models do not exhibit the strong assumption of independent and identically distributed error terms and its underlying behavioural assumption of independence of irrelevant alternatives of the standard multinomial logit model. Moreover, this specification allows the derivation of individual-specific estimates conditional on the observed individual choices.

Under a random parameters logit specification the utility a respondent i derives from an alternative j in each choice situation t is given by:

$$U_{ijt} = \beta_i X_{jt} + e_{ijt},$$

where X is a vector of observed attributes associated with each alternative and e_{ijt} is the random component of the utility that is assumed to be independently and identically distributed (iid) and follow a Type 1 extreme value distribution. The probability that an individual i chooses alternative j in a choice situation t is:

$$\Pr_{ijt} = \int \left(\frac{\exp \beta_i X_{jt}}{\sum_k \exp \beta_i X_{kt}} \right) f(\beta) d\beta,$$

which is the integral of standard logit function over the distribution of random parameters, $f(\beta)$. Since this integral has no closed form, parameters are estimated through simulation and maximising the simulated log-likelihood function. Parameter estimates in all models were generated using 100 Halton draws and the random parameters were specified as random with normal distributions apart from the reallocation coefficient which was specified as constant to allow for the calculation of the willingness-to-allocate (Train 2003; Revelt and Train 1998).

4.2 Econometric Estimation Results

In the analysis that follows we have pooled data for each treatment from the two countries. Although countries are different in terms of the macroeconomic variables as reflected in the differences in the socioeconomic background of the two samples per treatment, formal testing revealed that the pooled samples do not have statistically different socioeconomic characteristics. Differences in valuation can thus be attributed only to the effect of the funding sources. However, a country dummy variable indicating the country of individual was also included in the models and interacted with the tax coefficient¹.

4.2.1 Utility coefficients estimation

Renewable energy sample

All attributes (table 3) have a significant effect on the choice of the marine rehabilitation alternative and the expected signs with positive coefficients for water quality, biodiversity and reduced health risk. Results suggest that a reduction of the health risk from high to low is the most important characteristic of a marine management alternative. The tax reallocation coefficient is negative and statistically significant indicating that respondents are not willing to reallocate money from the renewable energy budget to finance the marine program *ceteris paribus*. The result is even more pronounced in the Ukrainian sample as implied by the negative coefficient of the interaction term.

Public Reform Sample

All attributes have a significant effect on the choice of the alternative and the expected signs with positive coefficients for water quality, biodiversity and reduced

¹ To control for differences in the income between the two samples a model including an interaction term of the income with the reallocation dummy was estimated but the relative coefficient was not statistically significant. The insignificance of the income was anticipated since in the reallocation task respondents are not income constrained.

health risk. Results suggest that high water quality is the most important characteristic of a marine management alternative. The tax reallocation coefficient is positive and statistically significant indicating that respondents are indeed willing to reallocate money from the budget previously spent to public reform programs to finance the marine program *ceteris paribus*. The reform of the public administration is actually viewed as a public bad and a reallocation of the tax revenues previously being spent for administrative reforms is a Pareto improvement contributing positively to respondents' utility. The result is even more pronounced in the Turkish sample as implied by the negative coefficient of the interaction term.

4.2.2 WTP estimations and marginal rates of substitution

Since we specified a fixed coefficient for cost, the marginal willingness to pay (WTP) for changes in each attribute was calculated in the renewable energy sample as the ratio of coefficient on each attribute to the coefficient on the monetary attribute:

$$WTP = -\frac{\beta_{\text{attribute}}}{\beta_{\text{cost}}}$$

The standard errors and the corresponding 95% confidence intervals are estimated using the bootstrapping method proposed by Krinsky and Robb (1986). The WTP estimates and the relevant confidence intervals are presented in table 4 (to be added)

In the public reform treatment WTP cannot be estimated since by definition WTP presupposes that there is a trade-off between the good under evaluation and the income (the provision of the alternative public good in our case). However, marginal rates of substitution are estimated in both samples to enable us examine whether the relative ranking of the individual attributes is affected by the choice of the alternative public good in the reallocation task. The medium water quality attribute was used as the *numéraire* (table 5):

$$MRS = \frac{\beta_{\text{attribute}}}{\beta_{\text{mediumwaterquality}}}$$

Confidence intervals are estimated using the Krinsky- Robb method with xxxx replications. In both treatments respondents consider low health risks as the most important attribute followed by high water quality. There is a reversal in the ranking for the remaining attributes.

Interesting conclusions can be drawn from the econometric analysis. Utility coefficients may differ under different funding sources and, more interestingly, in the case that the public good in the funding source is perceived as utility decreasing the tax coefficient may have a positive sign. More, the magnitude of this coefficient may differ between countries. To examine the equality of utility coefficients in the two samples the Swait–Louviere test will be applied in section 5. Speculations on the underpinnings of the positive sign of the reallocation coefficient as well as on the determinants of the difference in the magnitude of this coefficient in the two countries are offered in section 6.

5. Effect of the Funding Source on Valuation

5.1 Utility coefficients

Since in Random Parameter Logit models, utility coefficients are confounded with scale, testing for equivalence of preferences across the two samples requires scale parameter differences to be isolated. To formally test for identical preferences, and accounting for scale factor differences, the two-step procedure proposed by Swait and Louviere (1993) was followed. A likelihood ratio test was then performed, in the first stage, to test for equality in the utility parameters between the two samples while allowing for the scale to differ. If the equivalence of parameters cannot be rejected, a likelihood ratio test would also be performed in stage two to test if scale factors are equivalent.

The hypothesis of equal marginal utilities between the two samples can be rejected at 5% level of confidence with a test value of 114.

Further, given that the scale parameter is inversely proportional to the variance of the error term, we can infer that there is higher certainty over preferences in the public reform sample.

5.2 Relative ranking of the attributes

Since WTP estimations cannot be derived in the public reform sample we estimate the marginal rate of substitution of each of the attributes using the medium water quality attribute as the *numéraire*. To formally examine whether or not the marginal rates of substitution between the attributes are statistically different in the two treatments we will further apply the complete combinatorial test proposed by Poe et al. (2005). We finally calculate the Spearman rank-order correlation coefficient which indicates non-parametrically the degree of correlation between the rankings. A statistic of 0.75 implies that the two sets of data show strong, positive correlation.

6. The Public Sector in Ukraine and Turkey: towards understanding of the positive tax reallocation coefficient

When using a tax reallocation scheme to infer the value of a public good the researcher makes the implicit key assumption that both goods are of value to respondents who can trade-off between them to choose utility maximizing alternatives. However, in real life often a public service is perceived as a public bad by respondents contributing negatively to their utility.

In our case a reallocation of money from the public administration sector contributes positively to respondents' utility (*ceteris paribus*), implying that there is a welfare improvement when money is issued from its budget to finance the marine project. Closer examination of the public administration sector in the two case-study countries is revealing as to what drives the positive coefficient in the reallocation attribute when public reform is employed as the alternative public good. Both countries are characterized by inefficiently large public sectors while widespread corruption of civil servants constitutes a significant barrier to any effort towards administrative reform hindering the ability of the state to respond adequately to citizens needs. Corruption along with long tradition of malfunctioning in the public sector is likely to nurture the

PRELIMINARY DRAFT, PLEASE DO NOT QUOTE

belief that government's capacity to formulate and carry out reforms is limited. Consequently, corrupted public officials are likely to diminish peoples faith in government and its institutions cultivating the perception that <<...any effort for further reform will end up as a waste of resources>> as stated by a resident in Ukraine during the focus groups. The negative effects of corruption, being a manifestation of low institutional quality, on the overall evaluation of the performance of the political system are well documented in the political literature (For a review of the relevant literature see Anderson and Tverdova 2003). Aside from corroding effects on institutional trust, it appears that corruption significantly affects subjective well-being through direct effects on disposable income but also through psychological costs associated with generalized unlawfulness, uncertainty and insecurity (Welsch 2008). Since significant welfare losses are associated with corruption, a reallocation from the public budget previously spent on public servants, who are considered to be inherently corrupt, is a Pareto improvement, as indicated by the positive coefficient on the tax reallocation attribute.

Ample evidence of corruption is reported/documentated for both countries. The European Commission's *2009 Report on Turkey* makes a negative statement on Turkey's anti-corruption policy (pp. 12-13): 'Limited progress has been made in fighting corruption... [which] remains prevalent in many areas.' The *Report* not only underlines lacking enforcement of anti-corruption initiatives, but provides a rather long lists of measures yet to be taken, *inter alia*, on extending ethics rules to include academics, military personnel, and the judiciary; limiting Parliamentary immunity in relation to corruption-related cases; and adopting legislation on the financing of political parties and election campaigns.

The *Report's* claim regarding the 'prevalence' of corruption is certainly not ill-founded. Corruption seems to remain a serious concern for the people of Turkey—a fact that is quite observable in public opinion surveys. According to, for instance, the *2009 Corruption Perceptions Index* prepared by Transparency International (2010a), the world-acknowledged authority on this issue, Turkey ranks 61st with a score of 4.4 (an index from 0 to 10, 10 corresponding to no corruption at all and 0 to full corruption in the public sector)—and has oscillated around that rank in the past few years. Similarly, findings from a recent nationwide survey conducted exclusively on

PRELIMINARY DRAFT, PLEASE DO NOT QUOTE

this issue (Adaman *et al.*, 2009) revealed that most layers of both central and local governments were perceived as being seriously corrupt (traffic police, customs, deeds offices, procurement offices, municipalities and construction offices all received scores 6 or above, on a scale of 0 to 10, where 0 means no corruption at all and 10 full corruption). These findings confirm Transparency International's (2010b) 2009 Global Corruption Barometer study, which found the perceived corruption rate for public officers/civil servants to be 3.6 on a scale of 1 to 5 (where 1 corresponds to not at all corrupt and 5 to extremely corrupt). Moreover, in the private sector—where the current government has been trying to create an ambitious investment climate for national and international entrepreneurs—corruption was found to be a severe hindrance for investors: 42 percent of the companies surveyed in the *Enterprise Survey 2008* study of World Bank & IFC (2008) identified corruption as a major constraint in doing business. This is reminiscent of findings from an earlier nationwide survey conducted with firms (Adaman *et al.* 2003), where 48 percent stated they had been forced to pay bribes or bring gifts to civil servants in the past two years in order to 'get things done'.

Similarly, Transparency International ranks Ukraine 146th out of 180 countries on its 2009 corruption perception index while the World Bank Doing Business index assessing the country's business environment ranks Ukraine 142nd out of 183 countries. Since its declaration of independence Ukraine has launched several policies and packages of measures to combat corruption and rationalize public expenditures especially with the Orange Revolution of 2004². Yet, as the International Commission of Independent Experts³ (2010) state in their report for Ukraine that despite long term efforts to curb it, corruption persists and (pp.10) 'Ukraine badly needs to launch a new wave of substantial and comprehensive reforms, which are widely perceived as necessary'. In the official report to OECD, Ukraine admits that although significant anticorruption legislation has been adopted, fight against corruption remains inefficient with low level of prosecution to corrupt public servants (ACN 2010).

² "The Orange Revolution" Wall Street Journal, New York, N.Y.: Dec 28, 2004.

³ The committee is comprised of prominent international and Ukrainian academics, policymakers, and lawyers. The work of the Commission has been financed by the Swedish and Netherlands Ministries for Foreign Affairs, with additional support from the United Nations Development Program..

PRELIMINARY DRAFT, PLEASE DO NOT QUOTE

Using microdata on reported earnings, household spending and asset holdings, Gorodnichenko and Peter (2006) estimate that the extent of bribery in the public sector is as high as 0.9-1.2% of Ukraine's GDP in 2003.

Transparency International's 2009 Global Corruption Barometer reports a perceived corruption rate of 4.5 with 72% of the respondents considering government anticorruption efforts to be very ineffective and 21% of respondents reporting having paid a bribe in the past twelve months. These findings correlate with data from the European Social Survey (ESS 2004) on experienced corruption according to which the 32.6 % of respondents in Ukraine admits being asked for a favor or a bribe in return for a service by a public official in the past five years.

Meanwhile, in both countries respondents of the 2009 Transparency International's Global Corruption Barometer name public officials and civil servants as the most affected by corruption compared to other sectors/organizations. Figures are revealing. The majority of respondents in both countries, 28% of Ukrainian respondents and 35% of Turkish, perceive civil servants as being the most corrupted. Trust in public officials to honestly dealing with respondents is also low especially in Ukraine where only the 20.6% of respondents declare either trusting or trusting a lot (ESS 2004). The relative figure in Turkey is 52%. This is a clear illustration of the low quality level that people attach to the public good 'civil services'. Although one would expect that the bad quality of the existing public services would encourage people to opt for substantial reforms, it seems that low confidence to the country government's capacity to tackle corruption and efficiently implement reforms questions the rationale of distributing a large burden of the restricted public budget on civil servants' training.

We now turn on the significant sign of the country dummy interacted with the reallocation attribute. Our analysis revealed that the magnitude of the reallocation sign may be different between different countries. In our case it seems that Turkish people perceive the reallocation of public money from the public administration reform to the marine program as a Pareto improvement more than their Ukrainian counterparts. Besides, Ukrainian people seem to trade-off more difficultly money currently spent to renewable energy projects to finance the proposed marine project. Accurate recommendations as to what drives the differences in the magnitude of the sign between the two countries under investigation cannot be made out of this experiment

and are thus not intended. We however speculate that cultural and political variables that shape people's perceptions but most importantly democratic longevity drive the results.⁴

However fragile, democracy in Turkey dates back to 1950 and compared to Ukraine, which has been under the strict political bureau regime till recently, Turkey can more freely question the balance between public and private as well as can question again more freely the magnitude of resources allocated to the public sphere.

Finally, environmental objectives are a clear priority for both countries with Ukrainian people attaching higher value to environmental issues, like renewable energy penetration, than their Turkish counterparts. Higher environmental awareness in Ukraine is also reported in the 2008 wave of the ESS where the 29.5% of Turkish respondents, compared to 39.2% of Ukrainian respondents declare that the statement 'it is important to care for nature and environment' is very much like them.

7. Conclusions

In this paper we seek to contribute to the ongoing debate relating to the choice of an appropriate payment vehicle in stated preferences valuation studies by exploring the use of a tax reallocation scheme in a low-income setting and formally test the effects of different funding sources to stated individual valuation responses. A split sample procedure was employed to provide data for testing the hypothesis of equality in respondents' preferences when alternative public goods are traded-off to finance the project in question. Specifically, a public good perceived by respondents as a public bad is considered in one treatment. Results reveal that in such cases people choose, *ceteris paribus*, alternatives involving higher reallocation of the tax revenues. The reallocation of the existing taxation is thus welfare enhancing. Although such a design

⁴ Models controlling for different socioeconomic characteristics have been also estimated in the two country-distinguished samples for each treatment. Results however suggested that differences in income and institutional trust, which are the only statistically different socioeconomic variables, do not statistically influence the willingness to reallocate.

does not allow for welfare estimates to be elicited, since the implicit assumption for willingness to pay measures to be estimated is that people can apply compensatory decision making, the marginal rate of substitution for the non-price attributes is elicited.

Results suggest that the choice of the alternative public good significantly affects the preferences structure and thus researchers applying the reallocation scheme should be careful when defining the public good whose budget from the existing tax burden would be reduced. Further our results reveal that the magnitude of the reallocation coefficient, either positive or negative, may differ from country to country. More research is clearly warranted to examine the sensitivity of preferences and willingness to reallocate to the choice of alternative public goods and to validate the conclusions of the valuation task when different reallocation schemes are employed. Disentangling the sources behind the potential differences constitutes a further black box.

From a policy perspective results are highly informative for the relative importance of the examined public goods. The economic crisis presents a major challenge for both countries calling for rationalization of the public expenditures. Given the pressures to households' budget the economic turndown imposes, introduction of new taxes is impossible and reallocation of the existing tax revenues schemes is a promising policy measure to finance public goods. Studies therefore eliciting public s priorities among different public goods are highly needed to inform policy responses.

8. References

Anderson, C.J, Tverdova, Y.V., 2003. Corruption, Political Allegiances, and Attitudes toward Government in Contemporary Democracies. *American Journal of Political Science* 47 (1): 91–109.

Adaman, F., Çarkoğlu, A. & Şenatalar, B. (2003) *İşdünyası Gözünden Türkiye'de Yolsuzluk*, TESEV, İstanbul.

Adaman, F., Çarkoğlu, A. & Şenatalar, B. (2009) *Türkiye'de Kamu Reformu*, TEPAV, Ankara.

PRELIMINARY DRAFT, PLEASE DO NOT QUOTE

Anti-Corruption Network for Eastern Europe and Central Asia (ACN),2010. The Istanbul Anti-Corruption Action Plan Second Round of Monitoring. Report on key anti-corruption measures and investigation, prosecution and adjudication of corruption cases. Presented by Ukraine at the 8th Monitoring Meeting on 29-31 March 2010.

Bergstrom, J. C., K. J. Boyle, and M. Yabe. "Trading Taxes vs. Paying Taxes to Value and Finance Public Environmental Goods." *Environmental and Resource Economics* 28(2004):533–549.

Champ, P. A., and R. C. Bishop. "Donation Payment Mechanisms and Contingent Valuation: An Empirical Study of Hypothetical Bias." *Environmental and Resource Economics* 19(2001):383–402.

European Social Survey, 2004. Available at <http://ess.nsd.uib.no/>

European Commission (2009). *Progress Report on Turkey 2009*, Brussels.

Gorodnichenko, Y., Peter, K.S., 2007. Public sector pay and corruption: Measuring bribery from micro data. *Journal of Public Economics* 91: 963-991.

Independent International Experts Commission 2010. Proposals for Ukraine: 2010 – Time for reforms. Kyiv.

Keyman, E.F. (2005) 'Modernity, democracy, and civil society'.

Kontoleon, A., M. Yabe, and L. Darby. "Alternative Payment Vehicles in Contingent Valuation: The Case of Genetically Modified Foods." MPRA Paper No. 1827, University Library of Munich, Germany, 2005.

Krinsky Itzhak and Leslie A. Robb.1986. "On approximating the statistical properties of elasticities." *Review of Economics and Statistics* 68(4):715–719.

Mitchell, R.C. and R.T. Carson.1989. Using Surveys to Value Public Goods: the Contingent Valuation Method. Washington: John Hopkins University Press for Resources for the Future.

Morrison, M.D., Blamey, R.K. & Bennett, J.W. 2000. 'Minimising Payment Vehicle Bias in Contingent Valuation Studies.' *Environmental and Resource Economics*, 16: 407-422.

Nunes Paulo A.L.D. and Chiara M. Travisi. 2009. "Comparing Tax and Tax Reallocation Payments in Financing Rail Noise Abatement Programmes: Results from a Stated Choice Valuation Study in Italy." *Environmental and Resource Economics* 43 (4):503-517.

Revelt David and Kenneth Train. 1998. “Mixed logit with repeated choices: households’ choices of appliance efficiency level.” *Review of Economics and Statistics* 80: 647–657.

Stevens, T. H., N. E. DeCoteau and C. E. Willis (1997), ‘Sensitivity of Contingent Valuation to Alternative Payment Schedules’, *Land Economics* 73, 140–148.

Swait Joffre and Jordan Louviere. 1993. “The role of the scale parameter in the estimation and comparison of multinomial logit models.” *Journal of Marketing Research* 30 (3): 305–314.

Transparency International (2010a) ‘2009 Corruption Perceptions Index’, available online at: <http://www.transparency.org/>, accessed on May 10, 2010.

Transparency International. (2010b) ‘2009 Global Corruption Parameters, available online at: <http://www.transparency.org/>, accessed on May 9, 2010.

Train Kenneth E. 2003. *Discrete Choice Methods with Simulation*. Cambridge University Press, Cambridge, UK.

Welsch, H. 2008. The welfare costs of corruption. *Applied Economics*, 40: 1839 1849

Wiser, R. H. “Using Contingent Valuation to Explore Willingness to Pay for Renewable Energy: A Comparison of Collective and Voluntary Payment Vehicles.” *Ecological Econ.* 62(2007):419–432.

World Bank & IFC (2008) *Enterprise Survey 2008*.

9 Appendix

Tables and Figures

Table 1: Attributes and their Levels

Attribute	Definition	Levels
Water quality	Transparency of water as indicated by sight depth	Low

PRELIMINARY DRAFT, PLEASE DO NOT QUOTE

		Medium High
Biodiversity	Number of different species and their abundance	Low Medium High
Public Health	Number of pollution hotspots associated with risk of contracting water-related diseases.	Low Medium High
Tax Reallocation	Reduction of the 2010 budget on Renewable Energy / Public Administration Reform Projects	0 (status quo): money will not be reallocated 20 euros 50 euros 80 euros 100 euros

Table 2: Descriptive Statistics

Socio-economics	Renewable Energy Sample	Public Reform Sample	P-value
Age	39.21 (14.67)	37.73 (15)	0.297
Gender (0=male,1=female)	0.41 (0.49)	0.60 (0.49)	0.5219
Household size	2.98 (1.36)	3.01 (1.47)	0.8244
Number of Children	0.79 (0.96)	0.72 (0.62)	0.3672
Education (1=tertiary education and higher, 0=otherwise)	0.65 (0.47)	0.57 (0.49)	0.0819
Employment (1=in full time employment, 0=otherwise)	0.57 (0.50)	0.55 (0.50)	0.6756
Household income (€ per month)	502.16 (452.17)	725.23 (1066.32)	0.0044
High Realism of the scenario	0.62 (0.48)	0.68 (0.46)	0.1823

PRELIMINARY DRAFT, PLEASE DO NOT QUOTE

Trust to the Government to undertake the marine restoration program	0.26 (0.44)	0.26 (0.34)	1

Table 3: RPL Estimation Results for the whole shelf (pooled data from Ukraine and Turkey)

Attribute	Renewable Energy	Public Reform
	Parameter (St Error)	
Water Quality Medium	1.45*** .12	.87*** (.10)
Water Quality High	1.48*** .13	1.20*** (.11)
Biodiversity Medium	1.27*** .12	.75*** (.09)
Biodiversity High	1.27*** .13	.18 (.11)
Health Risk Medium	1.10*** .13	1.1*** (.11)
Health Risk Low	1.86*** .17	1.21*** (.13)
Tax Reallocation	-.008*** .002	.01*** (.002)
Tax Reallocation* Country dummy	-.006** .0026	-.005** (.0025)
Alternative Specific Constant	-.11 .19	-.28 (.18)
Parameters standard deviation		
Water Quality Medium	.78*** (.14)	.65*** (.15)
Water Quality High	.57** (.23)	.57*** (.22)
Biodiversity Medium	.50*** (.18)	.55*** (.15)

PRELIMINARY DRAFT, PLEASE DO NOT QUOTE

Biodiversity High	.28 (.26)	.90*** (.16)
Health Risk Medium	1.07*** (.15)	.03 (.24)
Health Risk Low	1.59*** (.17)	.86*** (.16)
Log likelihood	-1131.572	-1264.573

*** Indicates significance at 1%, ** Indicates significance at 5%, * Indicates significance at 10%.

Table 4: Willingness to Pay estimates.

Attribute	WTP estimate
High water quality	
Medium water quality	
High biodiversity	
Medium biodiversity	
Medium health risk	
Low health risk	

95% Confidence intervals calculated using the Delta method in parentheses

Table 5: Marginal Rate of substitution

Attribute	Renewable Energy sample		Public Reform sample		P-value Poe et al. test
	MRS	Rank	MRS	Rank	
High water quality	1.02***	2	1.394***	2	
Medium water quality	1.00***	3	1.000***	4	
High biodiversity	.878***	4	.203	6	
Medium biodiversity	.876***	5	.867***	5	
Medium health risk	.762***	6	1.238**	3	
Low health risk	1.28***	1	1.395***	1	