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VALUE OF RECREATION UTILITY OF THE POLISH BALTIC COAST – WILLINGNESS TO PAY OR WILLINGNESS TO DECLARE?

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ABSTRACT: The idea of improving the quality of the Baltic Sea enjoys common understanding and acceptance. An implementation of this idea requires a cost-benefit analysis to define the correct scope of intervention. Monetary valuation of the benefits arising from the quality improvement was conducted for the Baltic Sea using the contingent valuation method, choice experiments, and travel cost method in 2004 and 2010 (both samples were representative for the whole country). Crucial sources for such valuation were the stated preferences of the respondents. The availability of ex-post data describing the occupancy rate of all swimming sites on the Polish stretch of the Baltic coast, collected for four consecutive years (2012-2016), makes it possible to compare two concepts, i.e. the ex-ante declarations concerning willingness to use high-quality environment and the actual consumers' choices. The results reveal serious discrepancies between the ex-ante and ex-post methods.

KEYWORDS: recreational value, the Baltic Sea, travel cost method, contingent valuation method

Introduction

The attempts to assess the state of the Baltic Sea and, more precisely, to find the monetary value of consequences arising from the deterioration of the quality of its waters date back at the beginning of the nineties (Markowska & Zylicz, 1999). The predominant valuation methods used were the contingent valuation method (CVM) and choice experiments (CE) (Kosenius & Ollikainen, 2012; Lewis et al., 2013; Kosenius, 2010). The travel cost method (TCM) was also applied in some studies in recent years (Czajkowski et al., 2015). It should be underlined that the Baltic Sea is one of many objects of similar studies. The reference list for valuation of marine areas and their benefits contains about 600 publications (Baulcomb & Böhnke-Henrichs, 2014) concerning 187 projects in the period 1975-2011. The review of the publications concerning various marine areas reveals a similar structure of applied methodologies – 80 projects were carried out with the use of CVM, nearly 40 studies used TCM and 25 – CE. Limiting the selection to one element of ecosystem services only, i.e. recreation utility gives the following picture: 38 projects used TCM, CVM was applied in 28 cases and CE in 10 studies.

Perception of the value of non-market goods/services is highly complex and subjective. The sole enumeration of the Baltic Sea utilities is relatively simple; however, determining the functions of these utilities in relation to the state of the Sea is much more difficult and bears the risk of a subjective choice of many assumptions and of the method itself. Even more difficult task is to make prognoses for future changes in ecosystem services standards that will result from the envisaged protective and regulative measures (Hanley et al., 2014). The development of EU legislation prompts the need for taking up such a complicated scientific challenge, e.g. the revised *Bathing Water Directive* (2006/7/EC) or *Marine Strategy Framework Directive* (2008/56/EC), which require that cost and benefits analyses are conducted for environmental quality improvement processes (Hanley et al., 2014).

Not to denigrate the formal arguments arising from the EU legislation, it seems important to compare the costs and benefits of protective measures concerning the Baltic Sea in the context of substantial public funding being allocated to these measures. While the costs of implementing various protective scenarios are quite well estimated, the monetary valuation of their effects still bears a significant margin of error and raises some methodological concerns. Valuation techniques and their impact on the obtained values, in relation to the analysed individual benefits, are usually the subject of comparison. This research attempts to verify the credibility of willingness to pay declarations, where the “willingness to pay” is understood as attaching a certain value to the given good. The study was inspired by the work (Ahtainen

& Vanhatalo, 2012), the authors of which explain the disparity in the results obtained by the following factors: (i) a different number of analysed environmental services related to marine areas and (ii) the level of improvement of the quality of the service. WTP values in the studies analysed by the authors differed highly and varied between 11 and 635 USD/person/year (values from individual projects were expressed in USD PPP, 2010 price level). The reasons for such discrepancies were to be the scale of the project (local, regional) and the scope of expected quality improvement, together with the number of attributes analysed (water clarity, algae blooms, etc.). A growing number of valuation studies focusing on the benefits of marine environment quality improvement allows more precise comparisons. However, all studies are based on the same assumption, i.e. they compare only the stated preference but not their actual performance (revealed preference). Stated preference can be compared with the revealed preference providing that for a given population, the stated preference was examined (with the use of CVM or CE), and an analysis was made of people's actual choices of recreation sites, which considered the quality of the marine environment. Such prerequisites are fulfilled for the Polish part of the Baltic Sea coast. Time integrity of the comparison is also ensured in this case.

Table 1. Synthesis of 1994 research for the Polish part of the Baltic Sea coast

Time of research	1994 pilot study	1994 main study
Focus group	Tourists in coastal municipalities – beach users	A representative random sample of the grown-up population of Poland
Sample size	441	1162
Methods	TCM, CVM, valuation of recreational benefits	CVM, valuation of recreational benefits
Results – TCM	No success	
Results – CVM	86.9% supporting the tax, 100% of supporting tax accepted the lowest rate of voluntary payment of 0.76€ (2016 price level)	62.5% of the surveyed population supports the tax, and 90% of the supporters accepted the lowest rate of 3.8€ (2016 price level)
	WTP 136.8 € (2016 price level)	WTP 51.6€ (2016 price level)

Source: Markowska & Zyllicz (1999).

Earlier studies concerning the valuation of recreation utility of the Polish Baltic coast consist of 3 projects listed below in chronological order. The review focuses on the studies and main results; therefore, not all papers published following these projects are cited. The first studies were conducted in 1994 under the so-called Baltic Project, which also encompassed Estonia,

Lithuania, Latvia, Germany, and Sweden. The results refer only to the studies made in Poland because only this set of data can be verified.

Further studies on a representative sample (1004 responders) were conducted in 2010 (April-June) – Table 2.

Table 2. Synthesis of 2010 research for the Polish part of the Baltic Sea

Time of research	2010
Focus group	A representative random sample of grown-up (≥ 16) population of Poland
Sample size	1010 TCM, 2029 CVM
Methods	TCM valuation of recreational benefits, CVM
Results – TCM	71.5€ – consumer surplus per 1 trip, 2011 prices
Results – CVM	12.2 €, in 2011 prices, for Spike model, 16.8 € for OLS model. The former model had better customisation. Rates between 2-164 €, less than 60% of the population accepted the lowest rate. Income elasticity WTP for Poland: 1% change in income modifies WTP by 0.21%.

Source: Swedish Environmental Protection Agency, (2010) – Report 6348; Czajkowski et al. (2015); Ahtiainen et al. (2014).

The studies were also conducted in 2012 (Lewis et al., 2013), but this project's results will not be further discussed due to the very limited sample (130 non-random interviews).

The above-cited studies point out that most respondents regard the quality of the Baltic waters as important and are willing to bear expenses to improve this quality. These – purely theoretical – declarations will now be compared with the decisions actually made concerning the choice of recreational destination on the Baltic coast. This should answer the question of whether the Baltic Sea quality is a real decisive factor in such decisions. There are numerous other factors analysed while choosing a vacation destination, such as the infrastructure quality, accessibility, long-term habits, etc. However, this study aims not to construct a complex model explaining all decisive factors but to verify whether the Baltic quality is anyhow significant for the choice of recreation site. Considering that over 50% of respondents indicate – theoretically – that it is important to them, it seems interesting to analyse the actual decisions on the full sample, i.e. all tourists spending time on the Polish coast. Models that explain decisive factors for the choice of vacation destinations have been built for many years, but they do not encompass the quality of the environment as a possible rationale (Seddighi & Theocharous, 2002; Chang-Keun et al., 2018). Environmental aspects are also tackled in studies concerning tourist travel, but these usually focus on environmental quality deterioration resulting from increased tourist flow (Artal-Tur &

Kozak, 2015; Sunao Saito & Iara Strehlau, 2018). Therefore, the attempt to quantify an additional decisive factor, i.e. environmental quality, is seen as widening the existing research.

The paper is structured as follows: chapter 1 presents the results of earlier conducted valuation studies, chapter 2 describes the research concept, and chapter 3 describes the calculation models applied and the final results of the analysis, including their discussion. The conclusions are the subject of chapter 4.

The research concept

An attempt was made under this study to verify the contingent valuation applied in the Helcom/Holas research works described in Czajkowski et al. (2015) with the use of a dedicated econometric model. The Helcom/Holas studies and recommendations, as well as the source projects, base the valuation of quality/quality improvement of the Baltic Sea on the stated preference method. Under such approach, the unit valuation (of disadvantages resulting from the low quality of the Baltic Sea or benefits from its improvement) is constructed by averaging answers given by a representative research sample. The question/questions asked, however, refer to a hypothetical situation, i.e. to some virtual payment for the improvement of quality. The usual problem with such research is their adequacy to a real situation when payments are actually to be made. This study tries to empirically verify the hypothesis that assigns a specific, market-verified value to the Baltic Sea quality. The challenge is to find a relation between water quality (measured by the quality of bathing/swimming sites) and the number of visiting tourists. Since data on tourist turnout is available from municipalities (NUTS-5 according to the European geocoding standard), it is possible to examine whether having a swimming site delimited in a municipality and a good quality of this site has an impact on the number of visiting tourists. Polish tourists quite commonly recognize the problems with Baltic water quality. Therefore, establishing swimming sites with permanent quality supervision and transparent information policy seems to be the most creditable method to create one of the determinants of destination choice. Designating swimming sites is an element of competition between coastal municipalities. The low quality of water is the major limiting factor in this process. Therefore, one can assume that the existence of supervised and documented swimming sites reflects quite well the recreational quality of the Baltic coast.

The following two hypotheses were made:

1. The sole fact of having a swimming site (sites) increases the tourist turnout (in the current or the following year) significantly.

The basic quality of a bathing site is to provide safety and comfort for its users. In operational terms, this translates into two significant aspects: strictly defined requirements as to the safety/rescue services and regular water quality monitoring¹. It is impossible to separate these two components according to the users' preferences without dedicated, survey-based studies conducted on representative samples. Such studies have not been carried out in Poland so far. Therefore, treating water quality monitoring as the sole rationale for the choice of swimming location must be seen as simplification. Determining the percentage of tourists for whom the presence of swimming sites is important and assuming that – in their case – the Baltic water quality is the determinant for the choice is overrated. In fact, for some subpopulation, the main decisive factor relates to safety, not quality standards.

2. High water quality in the existing swimming sites significantly impacts the tourist turnout (in the current or the following year).

The existence of a swimming site requires regular monitoring of the quality of its waters. One should keep in mind some unawareness of an average consumer (tourist). Most users tend to treat the information that quality standards are met (i.e. „water is suitable for bathing/swimming”) as a guarantee of safety. In fact, this has little to do with safety guarantees. Keeping in line with the standards means only that a certain risk margin is not exceeded and does not mean guaranteed security. Such nuances, however, can only be distinguished by very few people familiar with risk management issues. The common opinion is therefore based on a strongly simplified understanding where quality monitoring and control equal „safety”.

To verify both the hypotheses mentioned above, it is necessary to have a few terms quantified:

- A. The term „coastal municipality”. According to the Eurostat definition, these are not only the municipalities bordering the sea but also those that have 50% of their surface within a distance of 10 km from the sea. In practice, this study was limited to municipalities bordering the sea because it is difficult to discuss the quality of bathing sites for a municipality without access to the sea. When one needs to use a car to get to a swimming spot, he/she can well choose a good quality site in a neighbouring municipality, even if it lies a bit further.
- B. „The fact of having a swimming site”. In fact, municipalities possess between 0 and 15 swimming spots. Because the tourist turnout is calculated for the whole municipality it is also necessary to average the water

¹ this statement can be treated as a simplification as there are also other requirements, such as information (e.g. water temperature table) but they do not seem to be leading choice factors.

quality data for the whole municipality (arithmetic average). In practice, the very fact of having just one swimming site (with monitored water quality) seems to be a sufficient condition. The number of swimming sites as an explanatory variable was therefore omitted.

- C. „Quality of water in the swimming site is marked as 1 – 4 for the whole season. The first model treats the assessment of water quality in the site as the only explanatory variable. More sophisticated calculations (the second model) also take account of site closures during the season (due to, for instance, blue-green algae blooms, E.coli bacteria, etc.). Such closures diminish the aggregated quality value.
- D. „Tourist turnout” is measured by an occupancy ratio (%) of tourist accommodation facilities. Tourist accommodation facilities are understood as hotels, hostels, private accommodation and campsites. Due to significant diversity between subsequent seasons, deviation from the mean value in individual seasons and changes in this deviation are measured.

The study did not aim to verify the monetary value of benefits calculated under previous projects (Czajkowski et al., 2015; Swedish Environmental Protection Agency, 2010). The objective was to compare hypothetical declarations and actual behaviours of tourists, not to evaluate the earlier calculated monetary unit values. Comparison of the values would not be possible for formal reasons, i.e. recreation on the Baltic coast is not limited to bathing and swimming. The Polish stretch of the Baltic coast is also used for sport (recreational) fishing, scuba diving (on wreck ships), sailing, surfing, etc. The analysed relationships between the water quality in swimming sites and the tourist turnout refer, therefore, only to a part of the Baltic’s utility value, leaving aside the entire non-utility value. Attempts to estimate the omitted elements of the utility value are rather difficult due to statistical data of incidental nature. It can be assumed that the sport of fishing is practised by about 1.2% of tourists spending time on the Baltic coast (Marciniak & Kałuża, 2010). Scuba diving can be attributed to about 0.4% of all visitors (Kowalczyk-Anioł, 2007). There is also a sailing subpopulation (windsurfing, kite-surfing), but for this group, the major rationale for the choice of destination and schedule is the windy days’ statistics. To recapitulate, with a small error, one may limit the Polish Baltic coast utility to the bathing/swimming activity.

The research sample consists of coastal municipalities. Out of the original list of 55 coastal municipalities (of the total of 2477 municipalities existing in Poland), 40 units with direct access to the sea are suitable for research. 27 municipalities of this group have designated at least one swimming site, although not all of those sites are monitored and categorised. The Chief Sanitary Inspector makes information concerning the quality of swimming sites. The study also requires data concerning the occupancy of tourist accommo-

dation facilities in individual municipalities. Such data is collected by the Central Statistical Office (GUS). The data is not publicly available for all the municipalities because of the standards of statistical confidentiality related to averaging information derived from a small number of sources. In fact, information has been collected for 47 coastal municipalities, including 25 with swimming sites.

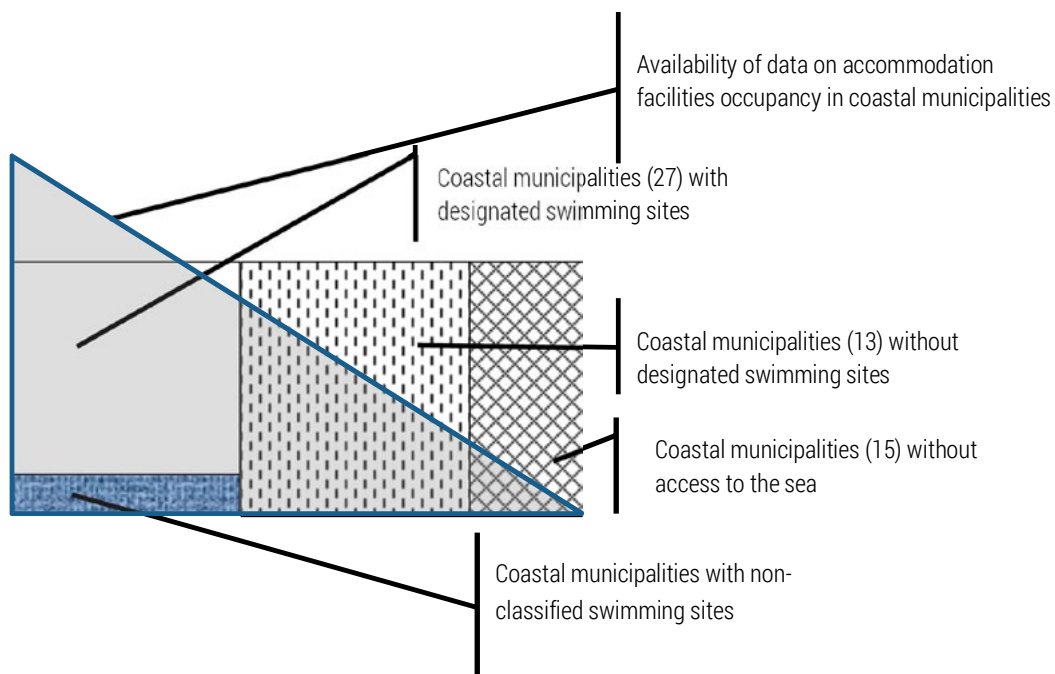


Figure 1. Disaggregation of coastal municipalities database

Source: authors' work.

The total number of tourist accommodation facilities exceeds 2300 objects (in summer seasons, including the campsites), the total capacity amounts to 128 thousand beds, visited by approx. 1.5 million tourists only during the high seasons (July-August). The analysis was conducted based on observations of a total of about 6 million tourists in the coastal municipalities over 4 years.

Model and results

Econometric analysis of such a described data set shows some weaknesses arising from the short time series, which resulted in the small number of observations. The number of coastal municipalities did not change. Still,

the methodology for assessing the quality status of swimming sites was modified over time, so using longer time series was impossible. Therefore, the number of observations could not be increased due to external reasons. The most promising estimation results were obtained based on the panel Generalized Method of Moments (GMM). This estimation method was adopted because it capacitates consideration of the endogenous character of explanatory variables. Designation of a swimming site is a decision of the municipal government, and it is the municipality that must bear the costs of safety arrangements and regular water quality monitoring. The GMM method makes it possible to consider this endogenous character in panel data. The results of calculations (presented in tables 3-4) indicated the low model fit, which also seems rather obvious. The tourist turnout is influenced by a huge number of variables, for example:

- weather,
- danger of terrorism on competing markets (Egypt, Tunis),
- catastrophes on competing markets (earthquakes, oil spills),
- additional income shocks (e.g. introduction of 500+ social support program).

In this context, it is understandable that a model built to calculate the impact of tourist turnout, which has only one explanatory variable, cannot possibly demonstrate a high fit level. It also stems from the fact that the objective of the research was not to precisely describe the changeability of the occupancy of tourist accommodation facilities but only to demonstrate the strength and direction of the impact that the existence of a swimming site has on the occupancy ratio.

To observe the strength and direction of impact from the explanatory variables on the accommodation facilities occupancy ratio, an estimation was applied to the following simple regression equations:

$$SWBN_{it} = \alpha_1 + \beta_1 K_{it} + \xi_{it}, \quad (1)$$

$$SWBN_{it} = \alpha_2 + \beta_2 K_{it-1} + \xi_{it}, \quad (2)$$

$$SWBN_{it} = \alpha_3 + \beta_3 JK1_{it} + \xi_{it}, \quad (3)$$

$$SWBN_{it} = \alpha_4 + \beta_3 JK2_{it} + \xi_{it}, \quad (4)$$

here:

$SWBN_{it}$ – level of accommodation facilities occupancy in i -municipality ($i=1,2,\dots,40$) in the year t ($t = 2012, 2013, \dots, 2016$),

K_{it} – dummy variable describing the existence of a swimming site in i -municipality in the year t , where:

$$K_{it} \begin{cases} 1 - \text{if at least one bathing zone existed in } i - \text{municipality in the year } t \\ 0 - \text{if no bathing zone was designated in } i - \text{municipality in the year } t \end{cases}$$

K_{it-1} – dummy variable describing existence of a swimming site in i -municipality in the year previous to t ,

$JK1_{it}$ – swimming site quality – annual sanitary inspection assessment in i -municipality in year t ,

$JK2_{it}$ – swimming site quality modified by the number of closures (sanitary assessment with $a/62$ fraction added, where a is the number of days in the season when the swimming site was closed) in i -municipality in the year t ,

$\alpha_1, \alpha_2, \alpha_3, \alpha_4 \in R$ – fixed values in the equations (1)-(4),

β_1 – parameter describing the strength that the existence of a swimming site has on the accommodation facilities occupancy ratio in i -municipality in the year t ,

β_2 – parameter describing the strength that the existence of a swimming site has on the accommodation facilities occupancy in i -municipality in the year previous to t ,

β_3 i β_4 – parameters describing the strength that the quality of a swimming site ($JK1_{it}$ and $JK2_{it}$) respectively) has on the accommodation facilities occupancy in i -municipality in the year t ,

ξ_{it} – denotes a random component.

Despite reservations related to the small number of observations, the first hypothesis could be confirmed: **designation of a swimming site has a statistically significant impact on tourist turnout**. The results of equation (1) estimation demonstrate that the existence of a swimming site is a statistically significant explanation (on the p-value level of 0.037) of the occupancy of tourist accommodation facilities. More precisely – it increases the ratio by 4.7% as compared to the value before the swimming site designation.

Table 3. Relation between the tourist accommodation facilities occupancy ratio and the existence of a swimming site – results of equation (1) estimation

Parameter	Dependent Variable: (SWBN _{it})
Variables	Equation (1)
Const.	0.184301 (9.741)***
K_{it}	0.046833 (2.107)**
J-statistic	0.0000
DW-statistic	0.67
Number of observations	149
Period	2013-2016
Adjusted R^2	0.023

Notes: *** p<0.01, **p<0.05, *p<0.10, the statistics of t-Student are provided in the brackets, R^2 – the coefficient of determination, DW – Durbin-Watson statistics. Instruments were: fixed values and explanatory variable values from the period ($t-1$).

Source: authors' work based on Eviews 9 programme.

To give an example – the 20% tourist accommodation facilities occupancy ratio in the municipality without a swimming site is increased to the level of 21% ($20 \cdot 1.047$) once the site is designated. The details of calculations using the Generalized Method of Moments are presented in Table 3.

Corresponding calculations, assuming the relation between the presence of a swimming site in the previous year and the occupancy rate in the current year, also brought about a statistically significant result (p -value = 0.049). The ratio value at the explanatory variable was a little higher. The increase in occupancy rate reached 5%. The model fit level was still low. The detailed results of equation (2) estimation are presented in Table 4.

Table 4. Relation between the tourist accommodation facilities occupancy ratio and the existence of a swimming site in the previous year – results of equation (2) estimation

Parameter	Dependent Variable: (SWBN _{it})
Variables	Equation (1)
Const.	0.182541 (8.555) ^{***}
	0.049669 (1.988) ^{**}
J-statistic	0.0000
DW-statistic	1.02
Number of observations	111
Period	2013-2016
Adjusted R ²	0.026

Notes: ^{***} $p < 0.01$, ^{**} $p < 0.05$, ^{*} $p < 0.10$, the statistics of t-Student are provided in the brackets, R^2 – the coefficient of determination, DW – Durbin-Watson statistics. Instruments were: fixed values and explanatory variable values from the period ($t - 1$).

Source: authors' work based on Eviews 9 programme.

However, it was impossible to prove the second hypothesis. Results of estimations of equations (3) and (4) show with no doubt that variables explaining the quality of designated swimming sites (JK1 and JK2) were statistically insignificant to explain the tourist accommodation facilities occupancy ratio in the Baltic coastal municipalities. This means that a correlation between the quality of a swimming site and the choice of recreation spot could not be confirmed. It is important to understand that the correlation was not impossible to prove but was not found. A number of modelling methods were used during the analysis, and none of them led to statistically significant results. The small sample size was certainly the leading factor reducing

the chances of obtaining statistically significant results. On the other hand, the term „small number of observations” refers to a purely econometric point of view. The row of observations encompassed only four seasons. But what lies behind the tourist turnout in a single season is over 1.5 million Poles travelling to the Baltic coast, spending over 6 person-days.

The responders saw questions about hypothetical payment used during CVM investigations as rather virtual. Ex-post research conducted under this project spanned 4 years, during which over 6 million people visited the Baltic coast. It should be noted that the responders questioned about the willingness to bear costs (CVM) were informed about more potential benefits than just utilities (e.g. biodiversity, deep water oxidation, etc.). Theoretically, it is thus possible that the responders attached monetary values to non-utility benefits (such as those listed above) rather than to the utility they are directly benefitting from (the good quality swimming site). Such an explanation, however, sounds rather unlikely, especially that 38.3% of 2010 responders confirmed having visited the Baltic coast for recreation during 12 months prior to the interview (Swedish Environmental Protection Agency, 2010). Moreover, available studies that analysed the relation between utility and non-utility values indicate a close correlation of those values, and the relations of both components range between 50%:50% and 5%:95%, with the predominance of utility values (Baptiste et al., 2015; Fang et al., 2015).

One more factor should be mentioned which could have influenced such low calculation result which is the access to information. It was assumed that the choice of a recreation site was made in a rational and informed way, i.e. there was no deep asymmetry of information. Such assumption is formally correct – data about swimming sites were published on a dedicated www server, and lists of swimming spots and their parameters were published, prior to summer seasons, in daily papers and on internet news sites in the form of clear and easy-to-understand visualisations. Still, an open question remains about what percentage of tourists used this information. On the other hand, finding an answer to this question does not seem crucial because when people ignore information that is available to them, it may suggest that they attach low importance to the matter of water quality – yet another argument to prove that perhaps the quality is not a determining factor in their choice.

Some subjective assumptions must be adopted to transfer the econometric analysis results onto the benefits stream. The calculated 5% ratio of accommodation facilities occupancy (meaning the growth of tourist turnout) must be related to certain population. Because some municipalities already possess swimming sites, the growth should not be referred to the whole tourist population visiting the coast. Taking into account only the group (a dozen or so) of municipalities bordering the sea and not having swimming sites, the

increment in tourist turnout will be close to 2000 tourists per one season. In fact, the increment refers only to the bathing season between July and August.

Broadening the results onto the whole population of Poles visiting the coastal municipalities along the Baltic Sea during the summer season is not entirely correct. Such operation leads to higher estimates: the growth will reach 57 thousand tourists for the 2015 base year and 62 thousand for the 2016 base year. For such figures, the increment in consumer surplus (calculated using Helcom recommended index of 71.5 €/person) is around 4 million €/year. Huge discrepancies can be observed between the surplus calculations based on empiric data and those based on Helcom/Holas methodology using TCM, which gives the figure of 2.5 billion €/year – differences are thus fundamental. When the surplus was calculated based on CVM, national benefits were estimated at the level of 299.2 million € in 2011 prices. Regardless of the level of prices, discrepancies are still very high.

Conclusions

Designation of a swimming site has a small but statistically significant impact on tourist turnout; however correlation between the quality of a swimming site and the choice of recreation spot could not be confirmed. When the results of CVM studies were confronted with the analysis of actual consumer behavior, it became clear that it is very difficult to demonstrate that people attach any importance to the quality of the Baltic Sea, a site for their recreation. The acceptance of the lowest payment rate for improvement of the Baltic environment was not less than 60%, and the real increase in an occupancy rate of the tourist infrastructure caused by water quality reached 5%. The lack of a distinctive causal relationship between the quality of swimming sites and the number of visiting tourists suggests that caution should be exercised in interpreting the results of studies carried out with the use of CVM, where the questions asked to the responders concerned hypothetical willingness to pay for the improvement of the Baltic Sea waters quality.

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The contribution of the authors

Conceptualisation, K.B.; literature review, K.B.; methodology, K.B. and TM; econometric analysis, T.M.; data collection, K.B.; writing, K.B. and T.M.; conclusions and discussion K.B. and T.M. Both authors have read and agreed to the published version of the manuscript.

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