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# **The Contingent Valuation Method in assessing the value of sport's stadium in developing nations. The case of Poland**

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# The Contingent Valuation Method in assessing the value of sport's stadium in developing nations. The case of Poland

## ABSTRACT

The European Football Championship (Euro 2012) organized in Poland became the pretext for a number of infrastructural changes at a total cost of 100 billion PLN<sub>2012</sub>. Such high expenditure makes the Polish event the most expensive among events of this magnitude. The fact that these changes were 100% financed by public means raises the question whether these funds were used in a substantiated way. Therefore, the aim of this study is to estimate the willingness-to-pay (WTP) among the community of the Pomeranian region, in connection with intangible benefits and costs stemming from hosting the Euro 2012 in Gdansk. A survey conducted among 407 respondents was the source of information. The results of the study show that the average value of WTP<sub>benefit</sub> for the whole sample was 45,72 PLN<sub>2012</sub> and WTP<sub>cost</sub> was 3,86 PLN<sub>2012</sub>.<sup>1</sup> The aggregate values for the whole region was in terms of benefits and costs 396,6 million PLN<sub>2012</sub> and 33,49 million PLN<sub>2012</sub> respectively. The results thus confirm the existence of both intangible benefits and costs associated with the event. However, it should be noted that the importance of the net benefits is insignificant and does not compensate for the massive expenditure from public sources.

## Keywords

Mega sport event, Football arena, CVM, WTP

## 1. INTRODUCTION

Poland's participation in the staging of the UEFA European Championships in 2012 is a pretext to attempt to determine whether the commitment of public funds in such major events is justified. The event became a catalyst for the execution of more than two hundred projects including the construction of three football stadiums and the modernization of one for the total amount of 100 billion PLN<sub>2012</sub>, derived exclusively from public sources (Zawadzki,2013). The scale and structure of funding makes it far more problematic to justify the use of public sources based on economic terms alone. Therefore, an attempt was made to determine the intangible effects, based on Contingent Valuation Method (CVM).

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<sup>1</sup> PLN<sub>2012</sub> - Polish zloty according to the purchasing power of the 2012; In June 2012 the average exchange rate was: 1 USD = 3,3885 USD.

The purpose of this paper is to assess the value of Willingness to Pay for the intangible benefits ( $WTP_{\text{benefits}}$ ) and intangible costs ( $WTP_{\text{cost}}$ ) in relation to staging the Euro 2012 in the region of Pomerania, and the construction of the stadium in Gdansk in particular. These are tested using data from a survey of the Pomeranian citizens ( $n=407$ ). The indirect aim of this study is to identify determinants affecting the WTP of the regions' inhabitants.

The structure of this paper is as follows: in the first section general information about CVM is presented. The second section presents more detailed information on the conception and the basic features of the CVM survey and statistical methodology, as well as the results of the empirical analysis. In the last section aggregated values are assessed and the main conclusions are discussed.

## **2. THE USE OF CVM IN SPORT CONTEXT**

Most studies on the impact of mega sporting events on the host focus on measurable elements, so-called tangible effects (Essex, Chalkley, 1998; Levin, 2010; Fourie, Santana-Gallego, 2011). While the economic impact based solely on tangible effects may turn out to be insignificant, the promotion effect, community pride, better living conditions, etc., may have a marked effect on the cost-benefit balance. Therefore, intangible aspects have to be considered, as they can also indirectly stimulate the economy in the long term (Noll, Zimbalist, 1997). Some, like Crompton (2004), go further and suggest that the possible intangible benefits to cities, rather than the economic ones, may prove to be decisive in the final cost-benefit balance of a sporting event.

Method, which opens up the possibility of estimating the value of non-market goods, in particular public goods is CVM. Carson (2000, p. 1413) states that "Contingent valuation (CV) is a survey-based method frequently used for placing monetary values on environmental goods and services not bought and sold in the marketplace". In CVM research, respondents are asked to play the part of market participants in a hypothetical scenario in order to assess the maximum amount they would be willing to pay for good before they would rather resign from its ownership. In common with all other methods, CVM is not fault-free. As pointed out by Whitehead (2005), there is the difficulty of establishing whether responses to hypothetical questions are credible and could be regarded as valuable and measurable. Consequently, some terms arise such as hypothetical bias. The usual concern with hypothetical bias is that people will overstate their true valuation in hypothetical settings (Walker, Mondello, 2007). Harris et al. (1989) explain it in such a way that if the respondent believes that, in fact, will be forced to pay the declared amount, it gives an incentive to the squeeze called "free riding". If, however, one treats the study as a purely hypothetical or suspects that the declared amount shall be in no way affiliated with the amount of the payment, it may "overpledge" the declared amount of the willingness to pay. Researchers may, however, take some steps to minimize the likelihood of hypothetical bias, such as the removal of extreme responses from the

analysis, the non-disclosure responses of the other respondents, reminding that any payment that support the good would result in less money in the budget for other items, and finally apply the appropriate format questions in the form of dichotomous questions (Mitchell, Carson, 1989).

Another objection is related to the notion of protest responses, which reveal themselves in the form of negative answers to the question of willingness to financially support a specified project. These do not involve, however, a lack of value for the project or a lack of funds (genuine zero) but rather are motivated by protest behavior, like: "I'm not responsible for financing this project," or "I already pay enough taxes and other public charges" (Saz-Salazar, Guaita-Pradas, 2013, p.81). Therefore, as noted by Dzięgielewska and Mendelsohn (2007), it is important to separate protest responses from genuine responses in order to obtain more reliable WTP results.

Nevertheless, opponents of CVM do not propose a viable alternative that would allow a better estimation of the intangible effects. Moreover, following Wicker (2011, p.157) CVM is cheaper and less time-consuming than other methods with a similar purpose.

Currently, the method is eagerly used to determine the non-market value for goods of general use, in order to estimate the degree of the efficiency of use of public money for their construction and maintenance. The use of CVM in the context of sport is broad and covers several areas: most often it is used to justify the construction of a sports facility (Johnson et al., 2012), the hosting of sports events (Preuss and Werkmann, 2010) the functioning of sports clubs (Owen 2006) and the valuation of sporting success (Wicker, Prinz, von Hanau, 2012). From this study viewpoint, first two of the above areas are most important.

The literature review indicates that the utilization of WTP in the area of sport is more and more widespread. However, there is a research gap concerning  $WTP_{cost}$  and the evaluation of the net benefit value resulting from staging mega sport's event.

### **3. SURVEY & SAMPLE**

The survey was conducted using the direct interview method, in June 2012 over three weeks of Euro 2012. The research questionnaire was developed by the author, and the field work was carried out by six interviewers. The term of the research during the Euro 2012 was chosen deliberately. By placing the emphasis on cost-benefit analysis of the mega sport event, Author made an assumption that the awareness of gained benefits or incurred costs would be greater during the real influence of championships on residents. Respondents were adults, i.e. over 18 years of age, living in the area of the Pomeranian province.

In order to ensure the representativeness of the sample research the basic parameters, such as age, sex and education are representative of the population of each region.

The research questionnaire consisted of 17 questions. The first question served as a warm-up before the actual study and were aimed at obtaining

information about the respondent's knowledge on the event and the possible involvement in the Euro 2012 organization.

Then, a description was read which introduced the respondents to the issues taken in the study. Its content was the same for all respondents. The description was worded as follows:

„Apart from the revenues and costs of a monetary nature, Euro 2012 generates a number of benefits and costs, which are a subject of traditional valuation, so called intangible benefits/costs. Typical intangible benefits include:

- psychological benefits: national pride, nation unity, feel good factor,
- promotion of the host city/region,
- the quality of life improvement as a result of infrastructure changes in the environment,
- the legacy of the stadium,
- the motivation for a healthy lifestyle,
- the inspiration for the younger generation.

In turn, the intangible costs include:

- completion of infrastructure projects inconsistent with the residents' expectations, including concerns about the rational use of this infrastructure already after the event,
- inconveniences emerging in the preparatory process (noise, traffic congestion, etc.),
- decrease a sense of security due to increased exposure of the city/country in the international arena (terrorist attacks, etc.),
- the obstacles in the traffic during the event itself,
- nuisance associated with invasion of a large number of fans (piston, vandalism, theft, garbage, conflicts between newcomers),
- disturbing the public order and an increase in hooligan behavior in connection with the staged matches at the new football stadium during the event, as well as after its completion.

For every citizen the benefits/costs interact with varying degrees of intensity. Some perceive the Euro 2012 exclusively through the prism of the benefits others solely through the prism of the cost. It is also possible that, for some the organization of such a mega sport event is a contribution to the simultaneous disclosure of such benefits and costs.

After assuring, whether the respondent understood the meaning of the description, a hypothetical scenario was read out: „Imagine that a monetary value should be assigned to the indicated benefits and/or costs in accordance with the respondent's preference. Quoting specific amounts will oblige you to pay the very amount in the form of household property tax. Please note that the additional tax burden will be calculated annually for the next five years.

If you perceive intangible benefits, the indicated amount will constitute your contribution to the Euro 2012 organization. Please, indicate the appropriate

value on the payment card, which would identify the total value of the perceived intangible benefits.<sup>2</sup>

If you perceive the intangible costs, the indicated amount will constitute your contribution to the resignation from efforts for the Euro 2012 organization. In this case, the event would never take place in Poland and the proposed amount would be an expression of preference for maintaining the status quo. Please, indicate the appropriate value on the payment card, which would identify the total value of the perceived intangible costs.”

The design of a hypothetical scenario resulted in two questions, that were asked to each respondent: one on the valuation of benefits ( $WTP_{\text{benefit}}$ ) and one on the valuation of costs ( $WTP_{\text{cost}}$ ). In order not to have impression, that the benefits outweigh the costs in the hierarchy, in about 50 % cases the contents of the scenario were being changed in this way, that at first respondents had been asking for costs, and only later for benefits. The conception of the two questions being asked at the same time was justified by the ambivalent feelings the Euro 2012 might create: on one hand the conviction about appearing benefits, on the other the awareness of existing costs.

Naturally, if the respondent stated objections, recognizing that, for example, it is illogical to argue simultaneously for and against the event, their choice could only focus on one group of effects, which was reflected in a positive WTP value for this group ( $WTP > 0$ ), and a zero WTP for the second group of effects ( $WTP = 0$ ). To be certain whether indeed such dilemmas are the reason for the respondent's zero valuation of the benefits and/or costs, in each case, if the proposed  $WTP = 0$ , an additional question was asked about the reasons for such a decision. The intention was to distinguish a "protest zero" from a genuine zero valuation. Zero bids may represent honest responses caused for example by low level of income. But zero valuation may also represent protest bid by respondent who simply refuses to play the game (Mitchell, Carson; 1989).

In this study particular importance was attributed to the respondent's answer to the WTP question when twice, both for benefits, as well as costs, respondents pointed to a zero valuation. This state of affairs proved the occurrence of protest answers. It was assumed in advance that certain answers are a confirmation of the occurrence of "protest zeros". These included:

- I am not responsible for decisions relating to the organization or non-organization of the Euro 2012 and do not consider myself obliged to incur any costs in this respect,
- I pay enough taxes and do not intend to bear any additional tax burden,
- my decision would have been different if the form of payment were not in the form of a tax.

In turn, the group of responses testifying to the credibility of the zero valuation include:

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<sup>2</sup> Based on the results obtained in a pilot study 35 values were assumed ranging from 0 PLN to 1500 PLN. Particular values were selected according to the most frequently repeated proposals in a pilot study within the format of an open question.

- I am not interested in sports/football,
- financial constraints do not allow me to propose a higher amount.

Therefore, in this study we assumed "protest zero" answers to be those which simultaneously met two criteria:

- the respondent's valuation on both the benefits and the costs amounted to PLN 0,
- the respondent, as the reason for a zero valuation, indicated one of the answers belonging to the first of the above groups.

In accordance with the recommendations contained in the NOAA report, all respondents when asking questions about the valuation were instructed that the expression of willingness to pay a certain amount of this study will result in the depletion of their household budget exactly the value, which may lead to restrictions on the purchase of other goods both the private and public (Arrow et al., 1993).

**Table 1.** *Description of WTP determinants*

Variable	Abbreviation	Description
<b>Socio-economic</b>		
Age	AGE	Middle values in years: from 1= 18-24 years to 6 = 61-69 years; for 7= above 69 years assumed value of 70
Age <sup>2</sup>	AGE_SQ	The AGE square
Gender	GEND	1 = male; 0 = female
Education	EDU	1 = university degree; 0 = others
Income	INC	Gross income per month: from 1 = up to 1500 PLN; to 9 = above 8500 PLN
Household size	HHSIZ	Household size in persons
<b>Determining relationship to the Euro 2012</b>		
General football interest	INT	0 = none; 4 = very strong (every day)
Watching Euro 2012 football matches on TV	WATCH	0 = none; 4 = very often (every Day)
Attending Euro 2012 football matches	ATTEND	0 = no; 1 = yes
Consumption in the Euro 2012 fan zone	ZONE	0 = no; 1 = yes
Purchasing Euro 2012 souvenirs	PURCH	0 =no; 1 = yes
<b>Intangible benefits (only for WTP<sub>benefit</sub>)</b>		
Psychological benefits	PSYCH	0 = no; 1 = yes
Promotion	PROM	0 = no; 1 = yes



Improvement the quality of life	IMPROV	0 = no; 1 = yes
The legacy of the stadium	LEGACY	0 = no; 1 = yes
The motivation for a healthy lifestyle	MOTIV	0 = no; 1 = yes
The inspiration for the younger generation.	INSPIR	0 = no; 1 = yes
<b>Intangible costs (only for WTP<sub>cost</sub>)</b>		
Completion of infrastructure projects inconsistent with the residents' expectations,	EXPECT	0 = no; 1 = yes
Inconveniences emerging in the preparatory process	PREPAR	0 = no; 1 = yes
Decrease a sense of security	DECREASE	0 = no; 1 = yes
The obstacles in the traffic during the event itself	TRAFFIC	0 = no; 1 = yes
Nuisance associated with invasion of a large number of fans	FANS	0 = no; 1 = yes
Disturbing the public order and an increase in hooligan behavior	HOOLIG	0 = no; 1 = yes

Moreover, the empirical part of the study is based on identifying determinants affecting WTP. Their selection was mostly consistent with the determinants used in previous studies on the impact of sporting events or sports facilities on residents. In addition to age, gender and, the catalogue of determinants includes others, which can be divided into three groups:

- socio-economic,
- determining the respondent's relationship to good, which is the fact of the Euro 2012 staging,
- relating to specific intangible benefits and costs.

A specification of all the determinants of willingness to pay is presented in Table 1.

#### **4. THEORETICAL MODEL**

The empirical part of the study is based on testing a theoretical model and identifying determinants affecting WTP. It plays an important role in the study, as it allows to determine whether the dependency level of the WTP from the adopted variables is in line with expectations and, therefore, whether the test is credible. If it turned out that the variables interact in a statistically insignificant or worse in the opposite direction to that expected, that would undermine the theoretical basis of the study.

The elicitation format is a single question about the exact value of WTP in the form of a payment card. This means that the feature of the dependent variable in the form of willingness to pay is that it is non-negative, and at the same time with high probability for a number of responses equal to zero, which is compounded by the specifics of the research and at the same time the question of the intangible benefits and costs of the organization of Euro 2012. Indeed the research results revealed that the number of respondents who indicated one zero valuation (for benefits or for costs) equals 272 (67 %). The dependent variable is therefore left-censored with zero value. Author has therefore decided to apply Tobit model, which takes into account the censoring of the dependent variable for both left- and, if necessary, the right-side. It is also in accordance with canon presented by most authors dealing with issues of CVM in the field of sport. This model takes the form:

$$WTP_i = \begin{cases} WTP_i^* & \text{when } WTP_i^* > 0 \\ 0 & \text{when } WTP_i^* \leq 0 \end{cases}$$

for the regression equation:  $WTP_i^* = X_i\beta + u_i$        $u_i \approx N(0, \sigma^2)$

where: WTP is a variable WTP (PLN), WTP \* is latent variable, X is a vector of the explanatory variables,  $\beta$  is a vector of the parameters of the regression equation, and  $u_i$  determines the random equation.

It should be noted that the respondent answering the question of payment card format agrees to an amount of  $WTP_i^N$  while rejecting another, a higher amount  $WTP_i^W$ . This means that the actual willingness to pay is determined by the amount of not less than  $WTP_i^N$  and less than  $WTP_i^W$ . It can therefore be assumed that the probability of choosing  $WTP_i^N$  corresponds to a probability of willingness to pay lying in the interval between the lower (N) and higher (W) value of WTP:

$$P(WTP_i^N) = P(WTP_i^N \leq WTP_i < WTP_i^W)$$

Assuming a normal distribution of random, components  $u_i$  can be defined as the probability of choosing  $WTP_i^N$ :

$$P(WTP_i^N) = \Phi\left(\frac{WTP_i^W - X_i\beta}{\sigma}\right) - \Phi\left(\frac{WTP_i^N - X_i\beta}{\sigma}\right)$$

where:  $\Phi$  is a standard normalized cumulative density function. Then the likelihood function of considered tobit model takes the form:

$$L = \prod_{WTP > 0} \left[ \Phi\left(\frac{WTP_i^W - X_i\beta}{\sigma}\right) - \Phi\left(\frac{WTP_i^N - X_i\beta}{\sigma}\right) \right] \prod_{WTP = 0} \left[ 1 - \Phi\left(\frac{-X_i\beta}{\sigma}\right) \right]$$

Determining the optimal values of  $\beta$  and  $\sigma$  allows to estimate the average value of WTP ( $\overline{WTP}$ ) according to the following formula:

$$\overline{WTP} = \exp(X_i\beta) \exp(\sigma^2/2)$$

Since the results of the WTP values refer to the five years period, it is necessary to bring them to the same point of time. For this purpose the mean values are discounted and brought back to 2012, ie. the year in which the study was carried out. Discounted mean value ( $\overline{DWTP}$ ) will be calculated according to the formula:

$$\overline{DWTP} = \sum_{t=0}^4 \frac{WTP}{(1+r)^t}$$

where: r determines the adopted discounting rate.

The discounted mean value will be used in the final stage of the study in order to obtain aggregated WTP values for the region of Pomerania. Eventually this will allow to estimate the intangible net benefit of Euro 2012 organization in Gdansk:

$$\overline{DWTP}_{net\ benefit} = \overline{DWTP}_{benefit} - \overline{DWTP}_{cost}$$

## 5. RESULTS

Table 2 contains basic statistics on  $WTP_{benefit}$  and  $WTP_{cost}$  and the related determinants.. They show that the maximum value of  $WTP_{benefit}$  significantly exceed the proposed offer for  $WTP_{cost}$ . Higher preferences in terms of benefits is also confirmed by the mean values. While for  $WTP_{benefit}$  it exceeds 45 PLN<sub>2012</sub> for  $WTP_{cost}$  it is not higher than 4 PLN<sub>2012</sub>.

**Table 2.** *Basic statistics on WTP*

Metric/ordinal variables				
variable	Min.	Max.	Mean	Standard error
WTP <sub>cost</sub>	0	1000	45,72	114,4
WTP <sub>benefit</sub>	0	120	3,86	14,44
AGE	21	70	37,54	16,49
AGE_SQ	441	4900	1680	1461
INC	1	9	3,39	2,04
HHSIZ	1	8	3,14	1,34
INT	0	4	1,93	1,23
WATCH	0	4	1,78	1,24
Dummy variables				
variable	% of respondents			
ATTEND	4			
ZONE	18			
PURCH	15			
GEND	48			
EDU	31			

**Table 3.** Analysis of  $WTP_{benefit}$  determinants

variable	Including protest responses (n=407)				Excluding protest responses (n=352)			
	coefficient	Standard error	test z	p-value	coefficient	Standard error	test z	p-value
const	-351,323	47,678	-7,3687	<0,00001***	-325,73	47,1826	-6,9036	<0,00001***
AGE	4,26533	2,24466	1,9002	0,05740*	3,90189	2,22794	1,7513	0,07989*
AGE_SQ	-0,0429816	0,0251319	-1,7102	0,08722*	-0,0368817	0,0249531	-1,4780	0,13940
GEND	-0,0502004	11,9934	-0,0042	0,99666	-5,50275	11,9494	-0,4605	0,64515
EDU	27,9337	11,3443	2,4624	0,01380**	22,7675	11,3225	2,0108	0,04434**
INC	27,3606	2,77454	9,8613	<0,00001***	28,2195	2,79031	10,1134	<0,00001***
HHSIZ	4,59786	3,99387	1,1512	0,24964	6,07493	3,96848	1,5308	0,12582
INT	24,6621	7,46775	3,3025	0,00096***	28,1811	7,35485	3,8316	0,00013***
WATCH	12,7956	7,26434	1,7614	0,07817*	13,7604	7,14392	1,9262	0,05408*
ATTEND	21,2979	27,9694	0,7615	0,44638	8,53073	26,9888	0,3161	0,75194
ZONE	53,8368	18,1652	2,9637	0,00304***	49,6132	17,9686	2,7611	0,00576***
PURCH	-16,1658	17,0514	-0,9481	0,34310	-26,0754	16,618	-1,5691	0,11662
PSYCH	58,1212	12,3928	4,6899	<0,00001***	51,9142	12,5583	4,1339	0,00004***
PROM	66,9622	13,3799	5,0047	<0,00001***	46,7799	13,6143	3,4361	0,00059***
IMPROV	71,6403	13,0718	5,4805	<0,00001***	52,0995	13,1878	3,9506	0,00008***
LEGACY	47,8275	14,6613	3,2622	0,00111***	50,4339	14,9567	3,3720	0,00075***
MOTIV	12,7853	20,9998	0,6088	0,54264	16,9245	21,3378	0,7932	0,42768
INSPIR	38,0177	16,3905	2,3195	0,02037**	29,7927	16,2615	1,8321	0,06694*
Chi -square	324,3465			1,04e-58	328,4841			1,44e-59
log-likelihood	-1898,942				-1858,630			
Sigma	97,155				93,1279			

\*significance at 10% level, \*\*significance at 5% level, \*\*\*significance at 1% level.

**Tabela 4. Analysis of  $WTP_{cost}$  determinants**

variable	Including protest responses (n=407)				Excluding protest responses (n=352)			
	coefficient	Standard error	test z	p-value	coefficient	Standard error	test z	p-value
const	-71,8212	19,3232	-3,7168	0,00020***	-60,0998	18,3768	-3,2704	0,00107***
AGE	-1,00466	0,940458	-1,0683	0,28540	-1,23852	0,906184	-1,3667	0,17171
AGE_SQ	0,0130804	0,0103283	1,2665	0,20535	0,0157627	0,00997325	1,5805	0,11399
GEND	-4,03901	5,06462	-0,7975	0,42516	-6,69349	4,88804	-1,3694	0,17089
EDU	-0,619879	4,70947	-0,1316	0,89528	-2,73324	4,54053	-0,6020	0,54720
INC	4,13991	1,12801	3,6701	0,00024***	3,81865	1,0955	3,4858	0,00049***
HHSIZ	1,31593	1,6378	0,8035	0,42170	1,39134	1,6096	0,8644	0,38737
INT	3,40188	3,15425	1,0785	0,28081	4,77155	3,00668	1,5870	0,11252
WATCH	0,487599	2,98413	0,1634	0,87021	-0,980596	2,8275	-0,3468	0,72874
ATTEND	-24,7025	13,654	-1,8092	0,07042*	-23,7936	12,7553	-1,8654	0,06213*
ZONE	0,290241	7,61511	0,0381	0,96960	2,15197	7,32918	0,2936	0,76905
PURCH	5,84417	6,36243	0,9185	0,35833	4,03022	6,07065	0,6639	0,50676
EXPECT	42,5142	5,16507	8,2311	<0,00001***	42,1303	4,95872	8,4962	<0,00001***
PREPAR	40,6468	5,50163	7,3881	<0,00001***	40,7142	5,33492	7,6316	<0,00001***
DECREASE	27,9408	6,57857	4,2472	0,00002***	30,1151	6,46357	4,6592	<0,00001***
TRAFFIC	43,3746	6,21925	6,9742	<0,00001***	43,7829	5,96986	7,3340	<0,00001***
FANS	30,7203	5,75818	5,3351	<0,00001***	27,9882	5,50896	5,0805	<0,00001***
HOOLIG	29,0868	5,25376	5,5364	<0,00001***	27,5102	5,00977	5,4913	<0,00001***
Chi -square	147,4136			7,84e-23	162,9779			6,87e-26
log-likelihood	-375,9556				-363,3969			
Sigma	23,5354				21,948			

\*significance at 10% level, \*\*significance at 5% level, \*\*\*significance at 1% level.

The results of the regression analysis are presented in tables 3 and 4. Data resulting from the questionnaire was subjected to a statistical analysis with the use of statistical software - Gretl.

The presented results lead to the conclusion that most of determinants had a statistically significant impact on the decision to  $WTP_{benefit}$ . Only gender, household size, participation in the match at the stadium during the Euro 2012, purchase souvenirs with the logo of the event and motivation to lead a healthy life proved to be statistically insignificant. In terms of  $WTP_{cost}$  there is less variables affecting the level of the offer and apart from the catalogue of the six intangible costs only attending matches and income matter. The omission of protest responses generally increases the absolute values of the obtained coefficients. However, it does not affect the significance of the parameters.

## 6. RESULTS AGGREGATION

In this section, the values of willingness to pay obtained when applying the research sample will be transferred to the regional level. It will be based on multiplying  $\overline{DWTP}_{benefit}$  and  $\overline{DWTP}_{cost}$  by the number of adults living in Pomeranian province.

Then the results will provide the basis for estimating the impact of Euro 2012 in the field of intangible factors in the Pomeranian area. Mean values of  $\overline{WTP}$  distributed in accordance with the objectives of the study for 2012-2016 were summed and at the same time brought to the level of 2012 ( $\overline{DWTP}$ ). The interest rate taken in the discount calculation has been set at 3%. Taking the interest rate of this amount is facilitated by the fact that four of five expected payments have already occurred (2012, 2013, 2014, 2015). Currently (2015), the lowest levels of interest rates and deflation are observed in Poland. Therefore, it seems reasonable to apply a relatively low interest rate in discounted account. The proposed level of 3% is the average value of the reference rate set by the Polish National Bank in 2012-2015.

**Table 5. Aggregated values for Pomerania**

Area	Adults	$\overline{WTP}$	$\overline{DWTP}$	Total value
	[person]	[PLN]	[PLN]	[PLN]
<b>benefits</b>				
<b>Pomerania</b>	1838900	45,72	215,67	396595563
<b>costs</b>				
<b>Pomerania</b>	1838900	3,86	18,21	33486369

The aggregate value of the intangible benefits and costs in connection with the organization of Euro 2012 in Gdansk are presented in the table 5. The total value of the benefits was nearly 400 million PLN<sub>2012</sub> and was almost twelve times higher than the aggregate costs, valued at approx. 33.5 million PLN<sub>2012</sub>. On this basis it is possible to estimate the total net benefit in the amount of 363 million PLN<sub>2012</sub>.

At the end it is worthwhile relating achieved results to the real expenditure incurred in relation the Euro 2012 preparations in Gdansk. The stadium in Gdansk claimed more than PLN 921 million of public funds, which means that the estimated net benefits due to the organization of the event include only approx. 40% of expenditure in connection with its construction. Spending public funds can therefore be justified only when there are revealed significantly large measurable net benefits in Gdansk. However, the intangible benefits is an important element that could affect the final balance of Euro 2012.

## 7. CONCLUSIONS

Euro 2012 contributed to the analysis of the value of a football stadium in one of the host cities. The 100 percent of public funding which financed the event makes it impossible for the benefits to outweigh the costs, in a strictly financial dimension. To obtain a complete picture, it is therefore necessary to take into account the non-financial, intangible benefits. This paper confirms the earlier findings that even their inclusion does not substantially change the conclusions and does not justify such an evident participation of public funds in the financing of sports facilities.

The percentage of WTP > 0 and the value of WTP do not differ from the results obtained in other countries even wealthier than Poland. The regression analysis shows that the decision to allocate funds to support the Euro 2012 was made by people with high incomes, who expressed an interest in football, who are younger or older (not in a mean age) and well educated. In turn, the level of WTP<sub>cost</sub> was particularly high among person with high incomes, who perceive the threats connected with the mega sport's event host. The results in terms of WTP would probably be higher in case of obtaining higher incomes by Polish society. Poland is still a country, which is rather poor in terms of the western Europe standards. Hence, the obtained results although fairly high, are still lower than the real expenditures incurred in relation to Euro 2012.

In the case of the Euro 2012, the issue that emerges is the total abandonment of the use of private funds. Reliance solely on public sources of funding hinders, and in the case of large investments, as was the case in Gdansk, makes it impossible to obtain a surplus of benefits over costs, at least on the basis of CVM.

The study constitutes an excellent foundation for future research in Poland. It would be particularly valuable to confront the obtained ex ante results with the ex post results, as well as to extend the research to further Polish



cities which hosted the event in 2012, namely Warsaw, Poznan and Wroclaw.

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