https://doi.org/10.3727/152599521X16192004803502

MS 19 068 accepted for publication in *Event Management*

Residents' Perception of Intangible Benefits and Costs Associated with Hosting Major Sporting Events

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I have no conflicts of interests to disclose.

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Acknowledgement

The author would like to thank an anonymous referees for all the specific comments on the manuscript.

Abstract

The main purpose of this paper is to estimate on the basis of inhabitants' perception the overall composite and aggregated scores of two major sporting events held in Ergo Arena hall, on the border of Gdańsk and Sopot, in northern Poland. The indirect aim is to identify the determinants affecting the monetary offers of the locals of the two cities. The research results unveil that major sporting events may determine the appearance of intangible social effects which are eagerly valued by the citizens of host cities. The resident's valuation ranges between 6,08 PLN (1,96 USD) and 11,29 PLN (3,64 USD) for intangible benefits, while between 1,75 PLN (0,56 USD) and 2,21 PLN (0,71 USD) for intangible costs, depending on the city and the event. The results determines an increase in the values of intangible net benefits. The amount of net intangible benefit is much lower than in the case of mega sporting events. Nevertheless, it is more likely to host many major sporting events in a short time in one place. The regression analysis shows that the decision to allocate funds to support the Championships in 2016 and 2017 in Gdańsk/Sopot was made by people with high incomes, who expressed an interest in sport, but not necessarily in the sports discipline, and perceived intangible benefits, in particular civic pride and the feel-good factor. In turn, the level of WTP_{cost} was particularly high among people with high incomes who perceived the threats connected with the hosting of a major sporting event.

Keywords: Total economic value, contingent valuation method, major sporting event, non-mega sporting event, willingness-to-pay, public funds

Residents' Perception of Intangible Benefits and Costs Associated with Hosting Major Sporting Events

In the world-wide literature, much attention has been devoted in recent years to studies on the impact of mega sporting events on host economies. The most frequently undertaken ones include research on the tangible effects, i.e. tourist flow (Ahlert & Preuss, 2010; Fourie & Santana-Gallego, 2011), the labour market (Baade & Matheson, 2002; Hotchkiss et al., 2003; Tien et al., 2011), infrastructural changes (Burbank et al, 2002; Chalkley & Essex, 1999; Essex & Chalkley, 1998; Hiller, 2000) and the construction of sports arenas (Preuss, 2004; Searle, 2002).

In contrast, limited consideration has been given to major, but not mega, sporting events. Although in the world literature, the possible great impact of non-mega sporting events on the host has been mentioned, there is little evidence to indicate whether this is the case (Smith, 2009). It concerns, in particular, intangible social effects such as: community cohesion, civic pride, uniting people or improving self-esteem. Undoubtedly, this is largely because they are difficult to quantify (Walton et al., 2008). Despite this, it is often stipulated that these intangible effects could be at least comparable in scale to the tangible effects (Noll & Zimbalist, 1997). This means that considering them in the general accounting of costs and benefits allows for a proper evaluation of the impact of an event on the area, and a justification for the use of public funds for its implementation. The research conducted so far has referred only to mega sporting events and was based on the use of the Contingent Valuation Method (CVM) (Atkinson et al., 2008; Heyne et al., 2007; Preuss & Werkmann, 2011; Walton et al., 2008; Zawadzki, 2016) and the hedonic pricing method (Kavetsos, 2012).

The intangible effects of sporting events are goods that do not exist in the traditional market (and do not have a market price), and therefore it is necessary to search for solutions that will attribute a monetary value to these specific effects and, consequently, an economic valuation of these effects (Power & Harris, 1973). In this case, the subjective theory of value results from the conviction that the purpose of management is to satisfy human needs so their analysis should be the starting point in the interpretation of valuation. This means that every good, even when hard to measure, has a value that comes from its ability to meet human needs. In welfare economics, the concept of the Total Economic Value (TEV) of a good, understood as the sum of real payments and the so-called consumer surplus, plays a vital role (Marshall, 1925). This concept seems appropriate to attempt to value the intangible effects of sporting events due to their specificities, including their unique character and the presence of components in the form of both use and non-use values.

Therefore, the main objective of this paper is to estimate, on the basis of residents' perception, the total composite and aggregated scores of two major, albeit not mega sporting events held in Ergo Arena hall, on the border of Gdańsk and Sopot, in northern Poland. The choice of CVM is dictated by its ability to estimate the TEV of a good. As one of the few methods to do so, the CVM makes it possible to estimate the value of goods beyond their use value (Carson et al., 2001; Mitchell & Carson, 1989). In the neoclassical economy, the basis for CVM is the subjective theory of value based on the utility of the good presented to the consumer. The Willingness to Pay (WTP) and Willingness to Accept (WTA) categories are the link between subjective utility and market price, expressed in monetary units. WTP / WTA provide money subjective measures of the value of a good, including a public good. They thus prove the validity of using market prices to estimate the benefits or costs, including intangible ones, from

such activities as the organization of a sporting event. Although there appears a high risk of the disclosure of various types of bias that may undermine the validity of the research, appropriate framework for the research process and awareness of the importance of recommendations and guidelines for applying the contingent valuation method may mitigate the flaws of CVM utilization.

Poland, after the organizational success of Euro 2012, was readily chosen to host major, but not mega, sporting events. After 2012, Polish cities were venues for, among others, the World Indoor Athletics Championships 2014, the World Volleyball Championship 2014, the European Handball Championship 2016, or the European Volleyball Championship 2017. This study has been prepared based on the latter two of the above-mentioned events.

The inclusion of intangible social effects allows, inter alia, the cost of lost opportunities in connection with the organization of a sporting event to be determined, as well as measuring the effects of events that fall into the category of public goods (Taks et al., 2011). The valuation of intangible social benefits and intangible social costs will allow a determination of the intangible net effect (Zawadzki, 2016) and its comparison to the expenditure, amounting to 330 million PLN (106.43 million USD), which was incurred in building Ergo Arena hall, and which came exclusively from public sources. The scale and structure of funding makes it far more problematic to justify the use of public sources, based on financial terms alone. Therefore, an endeavor was made to determine the intangible effects, based on CVM.

The indirect aim is to identify the determinants affecting the Willingness-to-Pay (WTP) of the inhabitants of the two cities. Considering the determinants of WTP, it is possible, on the basis of an econometric analysis, to confirm the reliability of the research.

The structure of this paper is as follows: The first section presents general information about the possible social effects of major sporting events and the use of CVM for the analysis of sporting events. The second section presents the research conception and basic features of the CVM survey as well as statistical methodology. The third section deals with the results of the empirical analysis. In the last section, the aggregated values are compared to the real expenditure and the main conclusions are discussed.

Theoretical Background

Literature Review of Non-Mega Sporting Events' Social Effects

Hosting sporting events is widely assumed to provide a wide range of outcomes to local communities. However, much of the research on the impact of sporting events focuses on mega events such as the Olympic Games or the biggest Football tournaments (Baade & Matheson, 2002; Baade & Matheson, 2004; Essex, 2011; Kasimati & Dawson, 2009; Rose & Spiegel, 2011; Szymanski, 2002; Zawadzki, 2013). At the same time, not much space has been devoted to smaller, but still large, events, so called non-mega events, which reportedly may carry valuable outcomes for the host (Gibson et al., 2012; Mondello & Rishe, 2004; Taks et al., 2011). From this study point of view, non-mega sporting events can also include those major events whose analysis is the subject of this paper: the European Volleyball Championship and the European Handball Championship.

Although in the world literature more space is devoted to the impact of mega sporting events, in recent years the question of the significance of non-mega events in the field of social effects, both positive and negative, should be raised. Social effects are supposed to appear at the time of a given sporting event, and are considered to be linked with "collective and individual value systems, behaviour patterns, community structures, lifestyle and quality of life" (Balduck

et al., 2011). Indeed, in the literature there are examples of a close relation between sporting events and social positive outcomes: civic pride, social unity and cohesion, feel-good factor, improvement of self-esteem, improved quality of life, motivation to lead a healthy lifestyle and inspiration for the younger generation. (Chalip, 2006; Dowling et al., 2013; Kavetsos & Szymanski, 2009; Zawadzki, 2020). Non-mega events merge local communities to a greater extent and provoke closer cooperation (Taks, 2013). Their organisation leads to experiencing social opportunities, including spending time with acquaintances and gives a rare opportunity to meet new friends. Even smaller events may provide great time, which has a social value (Chalip, 2006).

Apart from the possible social benefits, the occurrence of negative social effect at the time of sporting events is also possible (Scholtz, 2019; Taks, 2013). On the other hand, the smaller events seem to be less disruptive in terms of stress, traffic congestion, parking acts of hooliganism, etc. (Smith, 2009). Hence the general conclusion that non-mega sporting events have the potential to create more positive and less negative social effects in the host community compared to mega events (Agha & Taks, 2015; Matheson, 2006).

Djaballah et al. (2015) proposed extended approach to the definition of social impacts. The authors separated the components related to social impacts and outcomes: social capital, well-being, collective identities, sport participation, urban regeneration, and human capital. Each of the above component was divided into more detailed examples of possible positive and negative social effects of non-mega sporting events hosted in 25 medium-sized cities in France. The respondents regarded as key local government stakeholders' definitely more often perceived positive than negative social impacts (73 per cent of respondents).

What is significant is the fact that non-mega events can be hosted by smaller urban centers that have no chance to organize the biggest events (Taks et al., 2015). More non-mega events, which may be hosted in a larger number of different cities, are going to generate more benefits at the aggregated level to more host communities, and thus to contribute a higher net benefit than the less-often-organized mega events. Due to their more local character, non-mega events are more attractive to local stakeholders, and their organization does not raise as many doubts as there are in the case of major events. Lastly, smaller events are perceived as those that are more sustainable than larger "big-bang" equivalents (Smith, 2009). This means that these non-mega events, to a greater extent than mega events, can contribute to long-term effects, known as legacy, including social legacy (Cornelissen et al., 2011; Gratton & Preuss, 2008).

The occurrence of a vast catalogue of social effects of sporting events may justify the fact of incurring significant expenditure associated with the organization of the sporting event itself or the facility where the event takes place. So far however, it is not known how non-mega sporting events actually affect the overall well-being of the community, especially from an intangible, non-monetary perspective. Although there are methods that allow for the monetary valuation of potential social effects, including those which attempt to value them using the contingent valuation method (CVM), they refer only to mega sporting events (Atkinson et al., 2008; Preuss & Werkmann, 2011; Walton et al., 2008; Zawadzki, 2016). Thus far, no submission was received on this topic regarding the particular issue of non-mega sporting events, although as mentioned above, non-mega sporting events may reveal a contribution to these effects.

The Use of CVM for the Valuation of Sporting Events

There are several methods that open up the possibility of assigning monetary values to intangible effects. These methods are divided into revealed preference methods and stated

preference methods (Pearce & Barbier, 2000). The first group of methods consists of observing the actual behavior and decisions of consumers who make a purchase or otherwise are the users of a given good (Willis, 2014). The second group of methods relies on attempting to simulate the market in order to show hypothetical behavior and consumer reactions to the proposed scenario related to the use of a given good (Kroes & Sheldon, 1998). The most commonly used revealed preference methods include: the travel cost method and the hedonic pricing method (Can, 1992). Neither of these methods allow the total economic value of the effects of mega sporting events to be determined because it is impossible to estimate the non-use value which is a component of the TUV. On the other hand, this possibility is provided by stated preference methods, among which the most widely used in the field of research related to the subject of sport is the CVM (Atkinson et al., 2008; Groothuis et al., 2004; Heyne et al., 2007; Preuss & Werkmann, 2011; Walton et al., 2008; Wicker et al., 2015).

The essence of the contingent valuation method is to determine the maximum amount that the respondent would be willing to pay or accept for a specific good described in a hypothetical scenario. This amount is expressed by the WTP of the respondents, who participate in the survey. Carson (2000) states that "contingent valuation 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 that elicits people's preferences for certain goods by finding out how much they would be willing to pay for specified improvements to them (Mitchell & Carson, 1989). In the area of sporting events, CVM was used to measure the increase in social welfare due to the organization of mega events. Previous studies have concerned those events that actually took place or those that have never taken place and will not

take place but have become a pretext for revealing the public opinion regarding their potential organization in a given venue (Atkinson et al., 2008; de Boer et al., 2018; Preuss & Werkmann, 2011; Walton et al., 2008; Wicker et al., 2016; Zawadzki, 2016).

The most widely discussed study in the world literature is that which was conducted in three cities of Great Britain (London, Glasgow and Manchester) before the Summer Olympics in London in 2012 (Atkinson et al., 2008). This was the first study in which estimates of the intangible benefits of the mega sporting event, affecting the inhabitants of the cities and at the same time the entire host country, were made. At the time of in-depth, one-to-one interviews respondents were asked for assigning a score out of 100 according to presented categories of intangible benefits: uniting people/feel-good factor/national pride, improving awareness of disability, motivating/inspiring children, legacy of sports facilities, environmental improvements, promoting healthy living and cultural and social events. Although another six categories were associated with intangible costs (crowding, increased risk of petty theft, etc) the authors, in their estimates omitted the occurrence of them, which made it impossible to determine the possible intangible net benefits in connection to London's organization of the Summer Olympic Games. Hence, the high, aggregated value of the intangible, positive effects of the Summer Olympic Games in 2012, estimated in the whole of Great Britain at nearly USD 4 billion, almost balanced the tangible costs associated with investments made in sports facilities at the level of USD 4.7 billion. In this study "the whole of Great Britain" was limited to three cities, namely London, Manchester and Glasgow, although the chosen respondents were not claimed to be representative of all UK households. Interestingly, the payment vehicles differed depending on the city. In London it was an increase in the household's annual council tax bill, whereas in Glasgow and Manchester it was a 10-year household contribution to a voluntary fund. Since the former is a

coercive payment vehicle and the latter is a non-coercive payment vehicle the possible effects of employed vehicles on hypothetical bias were discussed.

The organization of the Summer Olympic Games in 2012 was a pretext for conducting similar research on the valuation of intangible benefits, carried out on a group of 167 residents of Bath, located west of London (Walton et al., 2008). The choice of Bath instead of the real host city – London was explained by the value of the event to the United Kingdom as a whole. The sample seems not to be large, although it has to be stressed that the survey was conducted on the basis of a face-to-face street surveys and finally it well reflected the population of Bath. In this case the employed payment vehicle was set as a fixed rate of national tax. There were only four different bid amounts chosen in the study, however the respondents was not supposed to indicate their exact WTP offer, but rather intervals around the respondent's willingness to pay. Therefore a maximum likelihood model was utilised. The aggregated value of intangible benefits in connection with the organization of the Summer Olympic Games in 2012 was estimated at nearly USD 6 million in Bath alone and less than USD 200 million in the south-western part of Great Britain. According to the authors the results provided potential intangible benefits, although these benefits were not explicitly specified in the survey.

Another example was a study conducted by Preuss & Werkmann (2011), who used the CVM method to estimate intangible positive effects for the German community in the context of the potential organization of an event (which did not actually take place) - the 2018 Winter Olympic Games in Munich. A total of 1,011 respondents participated in the survey, in which 14+ residents of Rhein-Main-Gebiet region valued the fact of hosting mega sporting event. This region was chosen because it was far enough from Munich and thus reflected the value of the Winter Games for "non-Bavarians." Amongst the beneficial effects of Winter Olympic Games on

German population there were indicated the "intangibles" such as: better image in foreign countries and becoming more "sporty." Based on the survey, the German population's aggregated Willingness to Pay (WTP) was calculated by using two differing scenarios , which led to results of €535.4 million and €787.4 million, respectively. In this case, the aggregate value of intangible benefits identified with the sense of national pride varied between USD 744 million and USD 1.09 billion, depending on the scenario adopted. A regression analysis drew the conclusion that there was a significant relationship between the positive attitude to the organization of the Winter Olympic Games and the number of payments made under WTP.

Recently, CVM was used to assess the intangible benefits and costs of Euro 2012 in Poland (Zawadzki, 2016). This study is similar to the one presented in this paper considering the shape of the survey, although was conducted among the residents of five Polish regions, of which four were host regions and one was a non-host region. The research results show that Poles, despite being less affluent compared to citizens of Western Europe or the United States, are willing to pay a fee that expresses the subjective usefulness of specific goods, including the effects of mega sporting events. The case of Euro 2012 confirms the importance that should be given to the intangible effects in developing economies, where infrastructure demand is much greater, and thus the cost of organizing such sporting events even higher. Significantly, both in the host regions and in the rest of Poland, there was a willingness to pay higher fees in the case of intangible benefits rather than intangible costs. This means a net positive value not only in the immediate surroundings of the event, but also in the further corners of the host country, and it expresses the acceptance of the population of non-host regions towards the financing of the mega sporting event organized in the host regions.

Like all other methods, CVM is not without flaws. As mentioned by Whitehead (2005), it is problematic to determine whether the answer to a hypothetical question will not also be hypothetical, i.e. can it be considered binding? Consequently, the issue of hypothetical bias emerges, of which the most common fear is associated with overstating the real valuations of respondents (Walker & Mondello, 2007). Nevertheless, opponents of CVM do not offer a real alternative that would allow a better assessment of intangible effects. Moreover, CVM is perceived as less expensive and less time-consuming compared to such methods as the travel-cost method and hedonic pricing (Wicker, 2011). The literature review indicates that the use of CVM in the broadly-defined field of sport has become more and more common in recent years. However, concerning WTP, there is a research gap in assessing the intangible benefits and costs of major sporting events and connected therewith, the net intangible benefit of such non-mega events. Previous studies have been based solely on an examination of the effects of mega sporting events.

Utility Theory and the Application of CVM to Estimate the Benefits and Costs of Major Sporting Events

Consideration, in the valuation of the intangible effects of major sporting events, the concept of consumer surplus, allows for more precise determination of the individual's preferences, the usefulness of the good, and its social value. The Hicks concept, which is a development of the classical consumer surplus, is of great importance here (Hicks, 1943). This concept introduces four types of consumer surpluses enclosed in two measures of welfare, the so-called compensation variant and an equivalent variant. In this study the compensating variant was chosen for the benefit assessment, while the equivalent variant was used for the assessment of costs.

According to the Pareto concept, only a given entity may determine in what direction their welfare changes, and thus the direction of changes to their overall utility (Zawadzki, 2016). A given entity's utility measurements may not be changed by any other entity. The sum of the levels of welfare (utility) of all entities included in society can be considered as the overall social welfare. Taking this into consideration, to assess changes in the overall level of utility, data are needed regarding positive or negative increments in utility and its monetary values assigned to every citizen, which in turn requires data of individual utility functions.

For further study, certain changes, which may have a multiple nature, such as environmental changes, changes in the availability of a non-use good, and so on, need to be made to determine different levels of utility for citizens. With regard to the subject of this paper, the organization of a major sporting event may instigate such a change, thus as a result of such an event being organized in a given location, the increase in welfare should be determined. The utility function can be used for this purpose (Castellanos et al., 2011):

$$U = U(Y,P,S,Q),$$

where U is the highest possible level of utility (welfare) that can be achieved by an entity obtaining a certain income (Y), at a given price level (P), with the existence of specific determinants of a socio-economic nature (S) and the predetermined availability of a major sporting event (Q).

If we assume, *ceteris paribus,* that the organization of a major sporting event (Q_0) will contribute to achieving a higher level of utility than the lack of organization of such an event (Q_1), then:

$$U_0 > U_1,$$

and thus:

$U(Y,P,S,Q_0) > U(Y,P,S,Q_1)$

The entity will most likely be willing to pay for the existence of a change such as this since the organization of a sporting event suggests an improvement in the welfare of the entity (Zawadzki, 2016). Here, the maximum amount of income that an entity would be willing to pay for the event having been organized can be regarded as a measurement of the increase in welfare. The entity is then asked to consider two combinations of the availability of the major sporting event (Q_0, Q_1), which are associated with the same level of welfare:

$U(Y\text{-}WTP,P,S,Q_0) = U(Y,P,S,Q_1)$

It is assumed that a "rational" entity adjusts WTP to the amount at which the combination of both income and availability consequently produce the same level of welfare. Here, the value of WTP should be treated as a monetary value of the change in welfare ($U_0 - U_1$) This results from improving the availability of the major sporting event from the level of Q_1 to Q_0, and can be defined as the compensating differential.

The organization of a sporting event will, of course not always and not for all events, contribute to a growth in utility. An entity may quite easily be not interested in a sporting event and will attribute more risks than benefits to the organization of such an event. In such a case, the entity will derive a higher level of utility from the event not being organized:

$U_0 < U_1$

Then, the amount that the entity would be willing to pay to avoid changes and leave the utility at the same level as with the organization of the sporting event will be the so-called equivalent difference, as reflected in the notation:

$U(Y,P,S,Q_0) = U(Y\text{-}WTP,P,S,Q_1)$

Both cases are based on a single measure in estimating the benefits and costs arising from the organization of a major sporting event. While it is possible to use another approach, alongside WTP, based on Willingness-to-Accept (WTA) (Shogren et al., 1994), in this study it was decided not to use this approach due to the fact that WTA values assume substantially higher levels than WTP (Horowitz & McConnel, 2002; Rätzell & Weimann, 2006). Even assuming that the real preferences of the studied entities account for the emerging disparity between WTP and WTA, rather than the hypothetical nature of the market, and therefore this disparity is not produced by methodological error, the very probable distortion in the results achieved - different for the same good, depending on the valuation measurements used, will not be justified (Bishop & Heberlein, 1984).

WTP Determinants

The review of the literature allows to define the catalogue of the most common socio-economic and demographic factors in the case of CVM studies relating to sports events or sports facilities. These are: income, education, gender, age, number of people living in the household, distance between the place of residence and the location of the evaluated property(e.g. a stadium) and finally the respondent's attitude to the given good.

The application of the variable “income” is a common practice and the positive influence of income on the WTP offer was in many cases confirmed. (Walton et al., 2008; Wicker et al., 2012). This is because people with more disposable income are able to allocate more funds to the purchase of all goods, including those related to sporting events. The education level also has a positive effect on the WTP amount (Süssmuth & Heyne, 2010). This can be explained by the greater awareness of better educated people. The advantage they have is based on a clearer perception of the positive or negative effects related to the organization of a sporting event or the

construction of a sports facility. In the context of gender, previous studies show greater interest in sport, in particular football, among men and, consequently, greater willingness to make payments (Walton et al., 2008). The situation is similar in the case of younger people (Johnson et al., 2007). Younger people predominate among active fans, who identify themselves more with a given sport discipline and are more likely to participate in sporting events. Moreover, the number of people living in the household has a negative impact on the willingness to pay. Castellanos and Sanchez (2007) associate this with a lower level of income per one family member, but there are also other reasons, such as a greater scope of responsibilities and lack of time for pleasure, such as active participation in a sporting event. WTP is also negatively influenced by the increasing distance between the place of residence and the location of the evaluated property (Owen, 2006). This is due to the lower use of the good and its resulting benefits, and higher costs incurred by respondents in connection with its consumption (travel, accommodation), etc. The last group of factors influencing the willingness to pay are those determining a respondent's attitude to a given good. Previous studies, as part of CVM research, show that people with a positive attitude towards sporting events or more frequently using sports facilities are ready to pay higher fees (Atkinson et al., 2008; Carson et al., 2001).

The selection of appropriate demographic and socioeconomic determinants is also of key importance for transferring the obtained WTP value to the aggregate level. Due to the appropriate selection of the respondents in terms of gender, age, education, etc., it is possible to obtain a representative sample for the studied population.

Methods

Ergo Arena Hall in Gdansk and Sopot and the Sources of its Financing

Ergo Arena sports and entertainment hall, located on the border of two cities: Gdansk and Sopot, has been operating since 2010. It is one of the largest and most modern facilities of this type in Poland, where a multitude of sports events, music concerts and other performances take place.

The construction of the hall was associated with numerous controversies, including of a financial nature. The underestimation of the investment costs turned out to be a serious problem. Initially, it was assumed that the cost of the hall's construction would amount to 100 million PLN (or 32,25 million USD), with the city of Gdansk and Sopot expending 25 million PLN (or 8,06 million USD) of public funds for this purpose. In 2010 the average USD/PLN exchange rate was: US$1 = 3,1005 PLN. In fact, the outlays for this purpose increased to nearly 330 million PLN (or 106,43 million USD), burdening the budgets of both cities at 115 million PLN (or 37,09 million USD) each. The remaining 100 million PLN (or 32,25 million USD) was covered by the central budget. In the context of public financing, the equal financial contribution of both cities despite the substantial difference in their sizes was problematic. Gdansk is more than ten times larger than Sopot both in terms of area and number of inhabitants. This means that the construction of the hall caused a disproportionately bigger burden on the budget of the city of Sopot.

Data collection and participants

Two major events were the subject of this study: the European Men's Handball Championship 2016 and the European Men's Volleyball Championship 2017. As part of the 2016 tournament at Ergo Arena, six group stage matches took place on 16th, 18th and 20th January

(each day two matches were played). In the case of the 2017 tournament, the hall in Gdansk and Sopot hosted four national teams that played five main phase games between 24th and 28th August. The CVM research covered the area of the two cities: Gdansk and Sopot and was based on phone interviews carried out by a specialized public opinion research company utilising their database of phone numbers of residents of both cities. The applied sampling method was non-probabilistic quota sampling. In both sporting events, the research was conducted according to the following rules:

- each time, research was conducted on a sample of 500 people - 250 people per one city;
- research was conducted about six months in advance of the event itself: for the European Men's Handball Championship 2016 - in June 2015, and for the European Men's Volleyball Championship 2017 - in February 2017;
- respondents were selected amongst adult residents of both cities (i.e. at least 16 years of age, whose postal code indicated their place of residence to be within the borders of either city - Gdansk or Sopot);
- in order to ensure the representativeness of the research sample, each time, the basic parameters were agreed, which included: age and sex, with these features distributed among the population of both cities (Table 1).

Survey Design

During the preparation phase of the research questionnaire, it was decided to use a single question about the exact value of WTP in the form of a payment card (Mitchell & Carson, 1984). This involves providing respondents with cards inscribed with many rates ranging from 0 (the assumption accepted by all) to a high amount that should be rejected by all respondents. The

respondents familiarize themselves with the card and select a value of their choice. This approach provides a definite context for supplying an answer. It allows the respondent to have a better orientation on each issue studied and reduces the number of blank responses or ill-considered responses. As part of the study, each respondent was read a description serving as an introduction to the issues treated in the study, and intended to increase their awareness. The content of the description was identical for all the respondents in each of the two cities. It reads as follows:

"Major events such as the European Men's Handball Championship 2016 / European Men's Volleyball Championship 2017, beyond revenues and costs of a financial nature, also generate a number of effects of non-traditional valuation, so-called intangible effects, which may be divided into intangible benefits and costs.

Typical intangible benefits include:

- civic pride,
- social unity and cohesion,
- feel-good factor; improvement of self-esteem,
- improved quality of life,
- motivation to lead a healthy lifestyle,
- inspiration for the younger generation.

In turn, typical intangible costs include:

- implementation of infrastructure projects inconsistent with the wishes of residents,
- decreased sense of security,
- difficulties in traffic communication,

- difficulties connected with the influx of a large number of fans,
- injustice in relation to the displacement/forced removal of residents,
- social divisions.

These mentioned effects touch all citizens to a different extent. Some perceive major events exclusively through the prism of positive effects, others only through the prism of negative ones. Moreover, it must be taken into account that for some respondents, the hosting of such a large sporting event contributes to the simultaneous perception of both positive and negative effects."

Thus, a hypothetical scenario of events was presented:

"Imagine that the mentioned effects must be allocated certain monetary values consistent with your own preferences. Providing certain amounts will oblige you to make a payment in the form of an additional, one-time tax burden, increasing your property tax.

If you perceive intangible benefits, the amount you indicate will be your contribution to the organization of the European Men's Handball Championship 2016 / European Men's Volleyball Championship 2017. Please point out on the presented payment card an amount which is adequate to the total value of your perceived intangible benefits.

If you perceive intangible costs, the amount you indicate will act as your contribution to abandoning the hosting of the European Men's Handball Championship 2016 / European Men's Volleyball Championship 2017. In this case, the event would never have taken place in Gdansk and Sopot and the proposed amount would demonstrate your readiness for maintaining the status quo. Please point out on the presented payment card an amount which represents the total value of your perceived intangible costs."

The construction of the hypothetical scenario included two questions: one related to the valuation of benefits ($WTP_{benefit}$), and the other costs (WTP_{cost}). To ensure that the respondents subconsciously did not get the impression that the benefits appearing first outweigh the costs in the hierarchy, in about 50% of cases the content of the scenario was reversed so that the first question related to the costs, and only later the benefits. The approach of simultaneously asking two questions had its justification in the ambivalent feelings that a large sporting event like the European Men's Handball Championship 2016 / European Men's Volleyball Championship 2017 is able to generate: on the one hand, a conviction of the benefits, and on the other, an awareness of the existing costs. Naturally, if the respondent objected to the event, for example, it was illogical and they were against it, their choice could focus only on one group of effects, which was reflected in a positive WTP value for this group (WTP> 0), and for the second group of effects, a zero WTP value (WTP = 0). In order to minimize potential existence of hypothetical bias an effort was made to increase respondents' attention to their budget constraints. According to the National Oceanic and Atmospheric Administration (NOAA) report, all respondents were informed that the expression of certain WTP offer would translate into a burden on the budget of their household of exactly the same value, which could cause limitations on their purchase of other goods (Arrow et al., 1993). In addition a "cheap talk" was attempted to reduce hypothetical bias (Loomis, 2011). According to this approach the respondents were informed that WTP had a tendency to be overstated and were reminded to "use exclusively their own money".

Empirical Part of the Study

The empirical part of the study was based on testing the proposed concept of utility theory and determining the factors affecting WTP by means of CVM method (Table 2). This played an important role in the study because it allowed the determination of whether the

dependence of the WTP level on the adopted variables was in line with expectations, and whether the study could be considered reliable. If it appeared that the variables acted in a statistically insignificant manner or - what is worse - in an opposite manner to that expected, it would undermine the theoretical basis of the research.

The selection of determinants took place on the basis of a literature review concerning the inclusion of CVM in the field of sport. On this basis, it was assumed that WTP was positively affected by the level of education , income , interest in sport and sport's discipline, including watching matches . The negative impact on WTP is related to gender (females) and to the number of people that live in one household. Most often, younger people express higher levels of WTP (positive or negative) toward sporting events than senior citizens.

The applied question format was 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 (WTP), is that it was non-negative, and at the same time with a high probability for many received responses, equal to zero, which was compounded by the specificity of the research and the simultaneous question regarding benefits and costs resulting from the organization of the European Men's Handball Championship 2016 (European Men's Volleyball Championship 2017). The dependent variable was therefore a left-sided censored value of 0. Therefore, the author decided to use the Tobit model, which takes into account such censorship (Cottrell & Luchetti, 2015). This choice is in line with the approach presented by a large group of researchers dealing with CVM in the field of sport (Atkinson et al., 2008; Johnson et al., 2001; Owen, 2006; Zawadzki, 2016). The model takes the following form (Tobin, 1958):

$$\mathrm{WTP}_i = \begin{cases} \mathrm{WTP}_i^* & \text{gdy} \quad \mathrm{WTP}_i^* > 0 \\ 0 & \text{gdy} \quad \mathrm{WTP}_i^* \le 0 \end{cases}$$

for the regression equation: $\mathrm{WTP}_i^* = \mathrm{X}_i\beta + u_i \qquad u_i \approx N(0, \sigma^2)$

where WTP is the variable WTP (PLN), WTP* is the hidden variable, X is the vector (levels) of the explanatory variables, β is the vector (vertical) of the parameters of the regression equation, and u_i determines the random equation. In answering the question in the payment card format, the respondent agrees to an amount of WTP_i^N at the same time rejecting a different, higher amount represented by WTP_i^W. As a result, actual Willingness-to-Pay is determined by an amount not less than WTP_i^N but less than WTP_i^W. Thus the probability of selecting WTP_i^N can be assumed to correspond with the likelihood of Willingness-to-Pay appearing somewhere between the lower (N) and higher (W) WTP values:

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

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

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

where: Φ is the standardized cumulative density function.

Then the credibility function of the considered Tobit model takes the form (Castellanos et al., 2011):

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

Determining the optimal values of β and σ allowed the mean value of WTP ($\overline{WTP}$) to be estimated. The mean value of WTP was used in the final phase of the study in order to obtain aggregate WTP values for Gdansk and Sopot. Then the total level of intangible benefits ($WTP_{benefit}$) and intangible costs (WTP_{cost}) amounted to:

$$WTP_{benefit} = WTP_{benefit}^{Gdansk\ 2016} + WTP_{benefit}^{Sopot\ 2016} + WTP_{benefit}^{Gdansk\ 2017} + WTP_{benefit}^{Sopot\ 2017}$$

$$WTP_{cost} = WTP_{cost}^{Gdansk\ 2016} + WTP_{cost}^{Sopot\ 2016} + WTP_{cost}^{Gdansk\ 2017} + WTP_{cost}^{Sopot\ 2017}$$

Ultimately, this allowed the net intangible benefit to be estimated in connection with the organization of the events in 2016 and 2017 in Gdansk and Sopot:

$$WTP_{net\ benefit} = WTP_{benefit} - WTP_{cost}$$

Finally, the results were applied to the actual expenditure incurred in connection with the construction of Ergo Arena. This provided a comprehensive way to determine the scale and direction of the impact of major sporting events for the host cities.

Results

$WTP_{benefit}$ and WTP_{cost}

The analysis of the basic parameters of the mean values of WTP and its determinants points to substantially higher offers of $WTP_{benefit}$ and WTP_{cost} in Sopot compared to Gdansk (Table 3). The difference in mean values for $WTP_{benefit}$ was 3.91 PLN for the European Handball Championship, while for the event in 2017 it was 3.96 PLN. In relation to WTP_{cost} the difference was 0.4 PLN and 0.16 PLN respectively. This may result from the greater wealth of the resort residents, which is confirmed by the higher average for INC ranges among Sopot respondents. In addition, Sopot tops the ranking of Polish cities in terms of the price per m^2 of residential premises. It also has the lowest level of unemployment in the country. Not without significance is the relative proximity of Ergo Arena hall for all inhabitants of Sopot, of which the land area is small. From the farthest corner of Sopot to the sports facility is less than 4 kilometres, while from the furthest reaches of the larger Gdansk, it is even over 16 kilometres. This means the greater availability of the hall for the inhabitants of Sopot and faster, more convenient access.

The analysis of basic statistics of WTP determinants also testifies to a generally greater interest in sport (INT_S) in comparison to sports disciplines: basketball and volleyball (INT_D). At the same time, volleyball raised greater interest among respondents in both Gdansk and

Sopot. This is in line with the national trend. Volleyball is the second most popular sports discipline in Poland after football. Polish players are among the best in the world, which has its expression both at the club level (since the 2008/2009 season, only once were Polish teams not in the final four in the volleyball champions league) as well as the national team level (two-time World Champions in 2014 and 2018). This undoubtedly affects the level of WTP mean values, which in both Gdansk and Sopot are higher for the valuation of intangible benefits and lower for the valuation of intangible costs for the event in 2017 (volleyball) compared to the event in 2016 (handball).

Among the respondents, there were slightly more females (GEND), while the percentage of people watching live matches of the championships in Ergo Arena (MATCH) did not exceed 5.6% (Gdansk 2016). Shopping for souvenirs and gadgets related to the organization of a sporting event (PURCH) happened more often than the purchase of tickets for the match. Every tenth respondent in Sopot made such a purchase during the European Handball Championship in 2016.

Among those analyzed, the most relevant socio-economic determinant among those proposed, in terms both of benefits (Table 4) and costs (Table 5), should be considered to be income (INC). Other results for socio-economic variables were characterized by great diversity, depending on the city studied and whether the analysis regarded the benefits or costs. The direction of the reported dependencies was not always in line with previous expectations. Focusing solely on the statistically significant impact of socio-economic variables on the level of Willingness-to-Pay regarding benefits, only gender (GEND) and education (EDU) should be noted. In the case of costs, in turn, importance should be attributed to the level of education variable (EDU) and the size of the household (HHSIZE). In the latter case, the result for Sopot

2016 is quite confusing as it means that more numerous households are able to offer a considerably higher WTP_{cost}.

Among the determinants of respondent attitudes to the European Championships, by far the greatest importance must be attached to the general interest in sport (INT_S) variable, which positively affected the level of $WTP_{benefit}$ in three of the four analyzed cases. This contrasts with the interest in sports discipline (INT_D), the variable, which, in any case, achieved statistical significance. Noteworthy is the case of Sopot during the event held in 2016, when both participation in Ergo Arena and the purchase of gadgets related to the ongoing championships significantly, as evidenced by the very high positive levels of coefficients, affected the value of $WTP_{benefit}$.

In the case of determinants affecting the WTP_{cost}, the attitude of the residents of Sopot should be distinguished at the time of the study conducted during the Men's Handball Championship in 2016. General interest in sport (INT_S) as well as purchasing souvenirs (PURCH) and attending matches (MATCH) had a negative (but in line with expectations) impact on the respondents' Willingness-to-Pay for intangible costs.

As might be expected, respondents' perceptions of the intangible benefits and/or costs were of great importance for their levels of WTP. In most cases, the coefficient for the variables received a positive value and at the same time was characterized by statistical significance. Interestingly, statistical significance is even more common in the group of costs than the group of benefits.

Comparison of Aggregated Results to the Expenditure Connected with the Construction of Ergo Arena

Table 6 shows that the total value of intangible benefits for both cities amounted to nearly 6 million PLN and was almost four times higher than the aggregate intangible costs, valued at approximately 1.53 million PLN. On this basis, the overall net intangible benefit can be estimated at 4.4 million PLN. The largest share in the structure of both intangible benefits and intangible costs, as one might expect, lies with Gdansk. This share comes to approximately 88% with regard to intangible benefits (5,266,577.77/5,959,889.76*100%) and approximately 91% with regard to intangible costs (1,398,397.16/1,532,719.37*100%). The small total share of Sopot is at odds with the equal financing structure with the use of public funds.

The aggregated results are different for both sporting events. Not without significance in this respect is the already mentioned fact of the greater popularity of volleyball in Poland, which, in terms of popularity, is second only to football. This can be expressed in the higher values of intangible benefits and lower values of intangible costs in the case of the championship organized in 2017, reported by the residents of both Gdańsk and Sopot. Finally, the volleyball championship generated a net benefit at the level higher than half a million zlotys compared to the handball championship.

The results should be related to the expenses incurred in connection with the preparations for Ergo Arena hall at the border of Gdansk and Sopot. The total expenditure for the construction of Ergo Arena increased to the amount of 330 million PLN. Although the total intangible net benefit is only 1,3% of this, it should be emphasized that Ergo Arena was not intended to have been prepared only for the two analysed events. The selection of Gdansk and Sopot to host the major sporting events did not lead to an increased burden on their budgets as there were no

additional investment projects to realize. Therefore, it can be assumed that the organization of each of the major sporting events determines the occurrence of a small yet positive value of net intangible benefit. This means that the city should attempt to maximize the number of hosted events. This state would improve the overall balance of the benefits and costs of using the sports facility, especially when the construction costs are high, even for Western European standards.

Conclusions

The results are specialized to a specific location (two cities in Poland) and two events (volleyball and handball).They confirm that it is crucial to take intangible factors into account in the final analysis of the benefits and costs of a specific good, such as hosting a major sporting event. Major sporting events, just like mega ones, can generate intangible social benefits and costs which are readily valued by the public. The occurrence of intangible net benefits, which means that $WTP_{benefit}$ is always higher than WTP_{cost} proves a positive relation between sporting events and social benefits: civic pride, social unity and cohesion, feel-good factor, etc.

The amount of net intangible benefit is indeed much lower than in the case of mega sporting events analysed so far in the world literature (Atkinson et al., 2008; Zawadzki, 2016). Nevertheless, hosting many mega sporting events in a short time is unlikely, especially in a country such as Poland, which is poor as for the standards of highly developed countries, and where there are numerous shortages in the field of infrastructure, including sports facilities. Smaller, though still large and important sporting events, open new opportunities for countries such as Poland - no restrictions to the organization of many such events in a short period of time. The expenditure for their organization is disproportionately smaller, and they are not required to meet restrictive requirements of sports federations among others in the field of sports infrastructure. In the case of major events, the practice is to submit applications for their

organization based on existing facilities, created regardless of the organization of such an event. Hence, if we assume what is confirmed in the conducted research, that each major event determines the occurrence of beneficial social effects (intangible net benefits), then the interested cities should strive to maximize the number of events hosted at the existing facility. This is the case within Gdańsk and Sopot, which have been the host of at least three, apart from those analyzed in this study, other sporting events in the last few years which can be considered major. For the local authorities the decision to organise larger numbers of smaller events may eventually be more beneficial than one mega event that almost always exceeds the host's resources and requires significant expenditures to face the resource demand.

Although the valuation of intangible net benefits for each of the two events is relatively low comparing them with the tangible expenditures for the construction of Ergo Arena., it should be emphasized that the research included only residents of the two cities: Gdańsk and Sopot. It is known that Ergo Arena hall is also used by residents of other locations. The neighborhood of a large city: Gdynia, and many smaller towns well connected to the Tri-City agglomeration (Wejherowo, Pruszcz Gdański, Kartuzy) would very likely improve the obtained results in terms of net intangible benefit.

The study reported in this paper was the first to include estimated intangible costs in the valuation of major sporting events. They are approximately four times smaller than the benefits (for both events), but should be taken into account in the final valuation of the net intangible benefit of a sporting event. The omission of an element of the intangible costs from the estimated impact of the event on the host would overestimate the results and, at the same time, lead to quite a serious distortion in this regard. At the same time, the lack of similar research in the case of other major events makes it difficult to assess whether the percentage of WTP > 0 and the value

of WTP differ from the results obtained regarding other hosts. Nevertheless, there is no doubt they are lower compared to mega sporting events, even those organized in Poland (Zawadzki, 2016).

The justification for utilisation of public funds in case of organisation of major sporting events is much more difficult in smaller cities like Sopot. The equal share in the financing of the Ergo Arena hall, considering the significant differentiation in the size of Gdańsk and Sopot, should be perceived to be problematic. From the perspective of Sopot, although the mean WTP offers were higher, the aggregated values were considerably lower. In the case of a smaller city, even a very large number of events will not allow a valuation of social effects that would justify the expenditure incurred in connection with the construction of sport's facility. In turn, in the case of Gdansk, it can be assumed that already a limited number of major events, would allow a valuation of the intangible net benefits at the level of the break-even-point.

However, the regression analysis shows that the decision to allocate funds to support the Championships in 2016 and 2017 in Gdańsk/Sopot was made by people with high incomes, who expressed an interest in sport, but not necessarily in the sports discipline, and perceived intangible benefits, in particular civic pride and the feel-good factor. In turn, the level of WTP_{cost} was particularly high among people with high incomes who perceived the threats connected with the hosting of a major sporting event. The results of WTP would probably be higher if incomes in Poland were higher.

This paper is an excellent foundation for future research. It would be particularly valuable to extend the location of research to cover other Polish cities to obtain more comprehensive results of WTP. Such an opportunity will happen because in the near future in

Poland it is planned to organize more major sporting events, like the Women's European Volleyball Championship and the European Athletics Team Championships.

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Table 1

The comparison of the basic parameters of city population and research sample in Gdansk and Sopot

Specification		City population		Research sample	
City/year	Age ranges [years]	Males [%]	Females [%]	Males [%]	Females [%]
Gdansk 2016	16-19	1.93	1.87	2.00	2.00
	20-24	2.75	2.80	2.80	2.80
	25-34	9.41	9.90	9.60	10.00
	35-44	9.56	9.63	9.60	9.60
	45-54	6,51	6.71	6.40	6.80
	55-64	7.51	8.98	7.60	8.80
	65+	8.98	13.48	8.80	13.60
Sopot 2016	16-19	1.50	1.49	1.60	1.60
	20-24	2.57	2.47	2.40	2.40
	25-34	8.49	8.40	8.40	8.40
	35-44	8.18	8.33	8.00	8.40
	45-54	6.24	6.50	6.40	6.40
	55-64	7.87	9.51	8.00	9.60
	65+	10.98	17.47	10.80	17.60
Gdansk 2017	16-19	1.89	1.81	2.00	2.00
	20-24	2.66	2.68	2.80	2.80
	25-34	9.06	9.52	9.20	9.60
	35-44	9.82	9.95	10.00	10.00
	45-54	6.68	6.84	6.80	6.80
	55-64	7.24	8.60	7.20	8.40
	65+	9.33	13.93	9.20	14.00
Sopot 2017	16-19	1.47	1.46	1.60	1.60
	20-24	2.50	2.48	2.40	2.40
	25-34	8.06	7.83	8.00	8.00
	35-44	8.51	8.54	8.40	8.40
	45-54	6.37	6.57	6.40	6.40
	55-64	7.68	9.20	7.60	9.20
	65+	11.35	17.97	11.20	18.00

Table 2

Description of WTP determinants

Variable	Symbol	Description
Socio-economic		
Age	AGE	From 1 = 16-19 years To 7 = 65 years and above
Gender	GEND	1 = male; 0 = female
Education	EDU	From 1 = University degree To 5 = Primary education
Income	INC	Gross monthly income: from 1 = to 1500 zloties; to 9 = above 8500 zloties
Household size	HHSIZE	The number of members of the household
Defining the relationship to the European Championship		
General interest in sport	INT_S	From 0 = none to 4 = very strong (every day)
Interest in sports discipline (handball, volleyball)	INT_D	From 0 = none to 4 = very strong (every day)
Watching matches on TV at the time of the European Championship	WATCH	From 0 = none to 4 = all
Attending European Championship matches	MATCH	0 = no; 1 = yes
Purchasing gadgets of the Polish national team/European championship souvenirs	PURCH	0 = no; 1 = yes
Intangible benefits (for $WTP_{benefit}$ only)		
Civic pride	PRIDE	0 = no; 1 = yes
Social unity and cohesion	UNITY	0 = no; 1 = yes
Feel-good factor; improvement of self-esteem	FEEL	0 = no; 1 = yes
Improved quality of life	QUAL	0 = no; 1 = yes
Motivation to lead a healthy lifestyle	MOTIV	0 = no; 1 = yes
Inspiration for the younger generation	INSPIR	0 = no; 1 = yes
Intangible costs (for WTP_{cost} only)		
Implementation of infrastructure projects inconsistent with the wishes of residents	INFRAS	0 = no; 1 = yes
Decreased sense of security	SECUR	0 = no; 1 = yes
Difficulties in traffic communication	TRAFF	0 = no; 1 = yes
Difficulties connected with the invasion of a large number of fans	FANS	0 = no; 1 = yes
Injustice in relation to the displacement/ forced removal of residents	INJUS	0 = no; 1 = yes
Social divisions	DIVIS	0 = no; 1 = yes

Table 3

Basic statistics of WTP and its determinants

Variables	2016 European Handball Championship				2017 European Volleyball Championship			
Metric/Ordinal	Gdansk 2016		Sopot 2016		Gdansk 2017		Sopot 2017	
	mean	SD	mean	SD	mean	SD	mean	SD
$WTP_{benefit}$	6.08	22.27	9.99	20.23	7.33	19.86	11.29	26.83
WTP_{cost}	1.81	3.64	2.21	7.47	1.75	4.34	1.91	7.16
AGE	4.69	1.76	4.97	1.76	4.7	1.75	5.0	1.76
EDU	3.51	1.05	2.23	1.23	3.39	1.14	2.63	1.14
INC	3.69	1.87	4.42	2.15	4.12	2.07	4.62	2.0
HHSIZE	2.9	1.51	3.28	1.3	3.05	1.45	3.6	1.28
INT_S	2.28	1.14	1.9	1.22	2.29	1.15	2.31	1.13
INT_D	1.86	1.04	1.2	1.09	2.02	0.88	2.14	1.04
WATCH	1.78	0.92	1.9	1.17	1.87	1.06	1.98	0.86
Dummy	% of respondents		% of respondents		% of respondents		% of respondents	
GEND	46.4		45.6		46.4		46.0	
MATCH	5.6		4.4		4.8		3.2	
PURCH	6.4		10.0		6.8		6.0	

note: $WTP_{benefit}$: from 0 to 250; WTP_{cost}: from 0 to 80; AGE: from 1 to 7; EDU: from1 to 5; INC: from 1 to 9; HHSIZE: from 1 to 9; INT_S: from 1 to 4; INT_D: from 1 to 4; WATCH: from 1 to 4.

Table 4

Analysis of $WTP_{benefit}$ determinants

	Gdansk 2016 $WTP_{benefit}$		Sopot 2016 $WTP_{benefit}$		Gdansk 2017 $WTP_{benefit}$		Sopot 2017 $WTP_{benefit}$	
	coef.	**p-value**	**coef.**	**p-value**	**coef.**	**p-value**	**coef.**	**p-value**
const	**-43.6951**	**<0.0001*** **	**-41.3056**	**<0.0001*** **	**-28.4657**	**0.0010*** **	**-51.3106**	**<0.0001*** **
AGE	0.271250	0.7853	0.626958	0.4204	-0.655295	0.4287	0.598467	0.5888
GEND	-1.55549	0.6514	**8.32414**	**0.0016*** **	-1.31011	0.6440	1.12117	0.7550
EDU	0.607342	0.7145	-1.04381	0.3748	**2.59541**	**0.0408** **	-0.222494	0.8925
INC	**4.94389**	**<0.0001*** **	**4.07595**	**<0.0001*** **	**1.54593**	**0.0242** **	**3.19369**	**0.0012*** **
HHSIZE	-1.03734	0.3838	1.31885	0.2015	0.0530445	0.9581	1.98762	0.1564
INT_S	4.49385	0.0734*	**6.89185**	**0.0016*** **	1.14788	0.4695	**6.86716**	**0.0481** **
INT_D	-0.376541	0.8943	-0.624339	0.6711	0.192905	0.9271	-0.355942	0.9295
WATCH	**3.78010**	**0.0629***	-0.656903	0.7615	1.11231	0.4059	1.78330	0.5628
MATCH	-2.73197	0.7294	**14.9799**	**0.0360** **	6.52830	0.2364	**20.0237**	**0.0500***
PURCH	-6.57895	0.4696	**10.4388**	**0.0273** **	4.03639	0.4697	7.22040	0.3392
PRIDE	**13.8681**	**0.0155** **	**5.88837**	**0.0401** **	**16.7104**	**0.0190** **	**18.1566**	**0.0002*** **
UNITY	**14.3097**	**0.0010*** **	**13.2373**	**<0.0001*** **	**34.5097**	**<0.0001*** **	1.12666	0.8242
FEEL	**21.3293**	**<0.0001*** **	**10.0191**	**0.0025*** **	**28.7293**	**<0.0001*** **	**17.3309**	**0.0001*** **
QUAL	1.66604	0.7889	3.17939	0.3745	**15.8402**	**<0.0001*** **	**26.7316**	**<0.0001*** **
MOTIV	9.31035	0.2009	1.14674	0.8253	**22.1488**	**<0.0001*** **	9.13968	0.1203
INSPIR	7.84790	0.2520	-2.87734	0.5545	**13.1456**	**0.0043*** **	5.61224	0.3425
χ^2	90.67601	1.88e-12	126.9431	2.51e-19	98.52823	6.53e-14	115.0922	4.80e-17
Log likelihood	-791.0794		-869.9023		-851.3395		-934.4081	
σ	24.1445		19.1785		20.3727		25.7133	

Notes: ***significant at the 1 per cent level; **significant at the 5 per cent level; * significant at the 10 per cent level.

Table 5

Analysis of WTP_{cost} determinants

	Gdansk 2016 (handball) WTP_{cost}		Sopot 2016 (handball) WTP_{cost}		Gdansk 2017 (volleyball) WTP_{cost}		Sopot 2017 (volleyball) WTP_{cost}	
	coef.	**p-value**	**coef.**	**p-value**	**coef.**	**p-value**	**coef.**	**p-value**
const	2.19971	0.1924	**-33.4581**	**<0.0001*** **	**-6.21845**	**0.0382****	**-22.4347**	**<0.0001*** **
AGE	**-0.689113**	**0.0002*** **	0.910872	0.2533	0.123482	0.6801	**0.879584**	**0.0646***
GEND	0.431719	0.4918	-0.775596	0.7667	-0.861877	0.4001	-1.13698	0.4701
EDU	0.208360	0.4885	**-2.19441**	**0.0696***	-0.302598	0.5035	0.942083	0.1901
INC	**0.297056**	**0.0936***	**1.59754**	**0.0167****	-0.119156	0.6328	0.235842	0.5879
HHSIZE	-0.157316	0.4551	**2.15108**	**0.0380****	0.0587900	0.8718	0.891480	0.1316
INT_S	-0.695310	0.1351	**-3.55579**	**0.0990***	-0.0862864	0.8851	0.294092	0.8467
INT_D	-0.0254510	0.9609	2.11378	0.1476	0.256347	0.7359	0.932305	0.5973
WATCH	-0.287064	0.4276	1.64099	0.4380	-0.220968	0.6337	0.598953	0.6527
MATCH	-1.54333	0.2669	**-12.2927**	**0.0740***	-1.88732	0.4338	0.588670	0.8945
PURCH	1.35302	0.3635	**-12.7161**	**0.0185****	1.06344	0.6035	-3.55927	0.3482
INFRAS	**2.19789**	**0.0493****	**15.0209**	**<0.0001*** **	**11.0329**	**<0.0001*** **	**9.91852**	**<0.0001*** **
SECUR	**5.09477**	**<0.0001*** **	**12.6722**	**0.0001*** **	**11.6892**	**<0.0001*** **	**12.4751**	**<0.0001*** **
TRAFF	**5.71848**	**<0.0001*** **	**11.9872**	**0.0084*** **	**7.31328**	**<0.0001*** **	**6.03973**	**0.0134****
FANS	**3.00890**	**0.0073*** **	**16.6468**	**<0.0001*** **	**10.0888**	**<0.0001*** **	**4.77487**	**0.0545***
INJUS	**4.38587**	**0.0101****	6.01615	0.1483	**5.67892**	**0.0046*** **	**6.56200**	**0.0516***
DIVIS	**3.68769**	**0.0045*** **	**12.4816**	**0.0001*** **	**8.35043**	**<0.0001*** **	**6.75816**	**0.0357****
χ^2	92.72172	7.86e-13	72.58688	3.50e-09	99.95083	3.54e-14	63.04491	1.59e-07
Log likelihood	-483.4942		-290.7603		-382.8073		-487.9977	
σ	4.31652		13.6862		6.15915		9.99747	

Notes:
***significant at the 1 per cent level; **significant at the 5 per cent level; * significant at the 10 per cent level.

Table 6

Aggregates divided into the 2016 and 2017 Championships

Area/Year	$\overline{WTP}$	Population	Total
	Benefits		
Gdansk$_{2016}$	6.08	393,461	2,392,242.88
Sopot$_{2016}$	9.99	32,755	327,222.45
Gdansk$_{2017}$	7.33	392,133	2,874,334.89
Sopot$_{2017}$	11.29	32,426	366,089.54
Total	-	-	**5,959,889.76**
	Costs		
Gdansk$_{2016}$	1.81	393,461	712,164.41
Sopot$_{2016}$	2.21	32,755	72,388.55
Gdansk$_{2017}$	1.75	392,133	686,232.75
Sopot$_{2017}$	1.91	32,426	61,933.66
Total	-	-	**1,532,719.37**
Net benefit$_{2016}$			**1,934,912.37**
Net benefit$_{2017}$			**2,492,258.02**
Total Net benefit			**4,427,170.39**