

## *Original research papers*

# IS SMALLER BETTER? THE VALUATION OF SOCIAL IMPACTS OF DIFFERENTLY SIZED SPORTING EVENTS. THE CASE OF GDAŃSK.

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### Abstract

**Introduction.** There is a discourse in the international literature regarding the impact of large sporting events on the place where they are held. In the last few years, particular emphasis has been laid on intangible effects, including social impacts that may occur not only in the case of mega sporting events but also in smaller sporting events. Therefore, the main aim of this paper is to estimate the monetary value of intangible social benefits of differently sized sporting events held in two sporting arenas in Gdańsk, Poland, using the contingent valuation method. **Material and methods.** The research concerns four sporting events of various sizes organised in Gdańsk in 2012-2023. In each case, a hypothetical event scenario was used to determine the willingness to pay among the surveyed inhabitants of Gdańsk. A tobit model was used to determine the statistical relationship between the proposed monetary offers and social impacts. **Results.** It was found that sporting events, regardless of their size, determine the occurrence of social impacts among host city residents. Even though aggregated values are lower in the case of smaller events, when added together, they constitute a higher percentage of actual public expenditure incurred on the construction of sports facilities. **Conclusions.** By valuing intangible effects, it is possible, at least partially, to justify the spending of public funds for the organisation of sporting events. At the same time, smaller sporting events have more significant potential for host city residents than mega sporting events.

**Key words:** sporting events, public finance, social impacts, monetary valuation, contingent valuation method

### Introduction

In the global literature, the most frequently discussed economic impacts of organising sporting events concern those associated with mega sporting events (MSEs) [1, 2, 3, 4, 5]. Although research on the effects of smaller sporting events is less common, their potential is more significant than larger “big-bang” counterparts [6]. According to some representatives of the world of science, it becomes increasingly difficult to justify ever-increasing amounts of money spent on mega sporting events such as the Olympic Games or the most outstanding football tournaments, which – as more and more research suggests – do not benefit the host economy unquestionably [3]. In addition, researchers seek the effects of sporting events other than purely economic ones [7, 8]. In this paper’s context, sporting events’ impact on social issues should be stressed. Social effects are likely to be found at the time of a given sporting event. They are considered to be linked with “collective and individual value systems, behavior patterns, community structures, lifestyle and quality of life” [9]. Although, in principle, intangible constructs such as “feel-good effect” or “national identities” have been mentioned in a number of impact studies [10, 11, 12], the monetary valuation of social impacts is difficult to measure and, therefore, missing. To include such intangibles in the overall balance of costs and benefits of organising sporting events seems essential, notably since growing public funds are used to finance them [13, 14]. According to Nordvall and Brown [15], justification for public-sector involvement should follow an excellent public reason. Therefore, it is vital to propose solutions enabling the assignment of particular monetary values to these effects, thus allowing their economic valuation. The method that

provides such opportunities is the contingent valuation method (CVM). One category of CVM is the willingness to pay (WTP), which provides a monetary measure of the subjective value that a given commodity, including public goods, expresses for the consumer [16]. Sporting events, regardless of size, potentially contribute to various positive and negative social impacts [17]. It is assumed that social impacts affect different stakeholders in the host communities: entrepreneurship, public and non-public sector units and the residents [18]. Therefore, the main aim of this paper is to estimate the monetary value of intangible social benefits of differently sized sporting events held in two sporting arenas in Gdańsk, Poland, using CVM. While Poland was selected to host sporting events relatively often after UEFA Euro 2012 (Euro 2012), none was an MSE. Therefore, this paper presents research results concerning the 2016 European Men’s Handball Championship, the 2017 Men’s European Volleyball Championship and the 2023 World Men’s Handball Championship. The UEFA Euro 2012 is considered an MSE, while the other three are smaller events. An indirect objective of the study is to compare the valuation of the social impacts of the sporting events to the expenditures incurred for the construction of two sporting arenas in Gdańsk, i.e., Arena Gdańsk Stadium and Ergo Arena Hall, which amounted to PLN 850 million and PLN 330 million, respectively. The former was the venue for Euro 2012, while the latter was used for smaller sporting events held in 2016, 2017 and 2023. The city of Gdańsk covered a significant portion of these construction expenses, which are challenging to justify solely on a tangible basis. To the author’s knowledge, this is the first attempt to compare events of different sizes organised in the same city and at a similar time.

### Material and methods

All four sporting events, i.e. one MSE (UEFA Euro 2012) and three smaller events (the 2016 European Men's Handball Championship, the 2017 Men's European Volleyball Championship and the 2023 World Men's Handball Championship) were held in Gdańsk at different times over twelve years. Since all above mentioned sporting tournaments were held in different years, all the obtained values were adjusted to 2023, i.e. the year of the last analysed event, in order to make the outputs comparable. Table 1 presents detailed information on the research surveys including the date of the survey, response rate and payment vehicle. In the case of Euro 2012, the direct interview method amongst the residents of Gdańsk was applied. The sampling method was based on quota selection. In order to ensure the representativeness of the test sample, basic socio-economic parameters (age, gender & education) were agreed with the distribution of these characteristics in the population of the city of Gdańsk. In the case of smaller events, phone interviews were carried out by a specialised public opinion research company utilising their database of phone numbers of residents of the city of Gdańsk.

The applied sampling method was non-probabilistic quota sampling. Each time, irrespective of the sporting event, the WTP elicitation method was a single question about the exact value of WTP in the form of a payment card. At the beginning of the survey, the social effects of sporting events were clearly defined and explained. The set of social impacts was slightly different for the Euro 2012 compared to the other three smaller sporting events. In the case of the former, they embraced psychological benefits (PSYCH), promotion of the country internationally (PROM), improved quality of life (QUAL), sports facility legacy (LEGACY), motivation to lead a healthy lifestyle (MOTIV) and inspiration for the younger generation (INSPIR). For the latter, they encompassed social capital (SOCIAL), well-being (WELL), collective identities (IDENTITY), sports participation (SPORT), urban regeneration (URBAN) and human capital (HUMAN). Their meaning has been explained in Table 2.

As part of the study, each respondent – a resident of the city of Gdańsk - in the case of every sporting event was read a hypothetical scenario, similar for each analysed event:

Suppose that continuing to use public means to fund sporting events (UEFA Euro 2012/ the European Men's Handball Championship 2016/

**Table 1.** Details of CVM research regarding four sporting events held in Gdańsk

Name and date of the sporting event	Event venue	Period of the research	Final number of respondents (N) / response rate (R)	Payment vehicle
UEFA Euro 2012 June 8 – July 1	Arena Gdańsk Stadium	June 11-26, 2012 (during the event)	N=282 R=71%	Additional tax burden increasing the respondent's household property tax. Obligation to make payments each year for the next five years.
Men's European Handball Championship 2016 January 15-31	Ergo Arena Hall	June 3-22, 2015 (before the event)	N=250 R=45%	Additional tax burden increasing the respondent's household property tax. Obligation to make one-time payment.
Men's European Volleyball Championship 2017 August 24 – September 3	Ergo Arena Hall	February 2-20, 2017 (before the event)	N=250 R=34%	Additional tax burden increasing the respondent's household property tax. Obligation to make one-time payment.
World Men's Handball Championship 2023 January 11-29	Ergo Arena Hall	October 15-31, 2022 (before the event)	N=223 R=72%	Additional tax burden increasing the respondent's household property tax. Obligation to make one-time payment.

**Table 2.** Explanation of social impacts included in the CVM studies in the case of MSE and NMSEs

Event(s)	Social impact	Possible examples of social impact
Mega sporting event (Euro 2012)	psychological benefits (PSYCH)	sense of national pride; awareness of uniting the nation; better frame of mind
	promotion of the country internationally (PROM)	media exposure; potential tourist destination
	improved quality of life (QUAL)	infrastructural changes in the surrounding area
	sports facility legacy (LEGACY)	sports arenas to be used after the event
	motivation to lead a healthy lifestyle (MOTIV)	physical activity; well-balanced diet
	inspiration for the younger generation (INSPIR)	practising sport by children and teenagers
Non mega sporting events (2016 Men's European Handball Championship; 2017 Men's European Volleyball Championship, 2023 World Men's Handball Championship)	social capital (SOCIAL)	spending time with family and friends; opportunity to meet new acquaintances
	well-being (WELL)	enjoyment; psychic income
	collective identities (IDENTITY)	national identities; collective solidarity
	sports participation (SPORT)	implementation of sport development programmes; inspiration for youth
	urban regeneration (URBAN)	changes of urban space, including the creation of urban areas more adapted to the social needs
	human capital (HUMAN)	social interactions; mutual assistance; personal development



the Men's European Volleyball Championship 2017/the World's Handball Championship) were put to a referendum. Providing certain amounts of money would oblige you to make a payment in the form of an additional tax burden, increasing your property tax. Do you think that you would vote for or against the proposal of organising the sporting event?

Afterwards, respondents were presented with a payment card, including tax amounts (dependent on the event itself), and asked how they would vote in one of the various amounts:

The amount you indicate will be your contribution to the organisation of the UEFA Euro 2012/the European Men's Handball Championship 2016 /the European Men's Volleyball Championship 2017/ the World Men's Handball Championship 2023. Please indicate on the presented payment card an amount which is adequate to the maximum value of your contribution.

While the interview and sampling methods differed for the analysed sporting events, the hypothetical scenario and the payment vehicle stayed the same. Thanks to the questionnaire investigation, it is possible to both determine the average level of WTP and estimate the parameters of the valuation function concerning specified determinants affecting the values of respondents' offers. However, the empirical part of the study was based on defining the variables possibly affecting WTP. In this matter, the most considerable were determinants related to intangible social impacts. On the one hand, while these social impacts were perceived by respondents, 1 was coded, and on the other hand, when they were not noticed, 0 was assigned. Apart from earlier mentioned basic socio-economic parameters and intangible effects, the determinants of WTP were considered: income (INC), household size (HHSIZE), interest in sports disciplines: football, volleyball, handball (INT\_D), watching matches on TV at the time of the event (WATCH) and attending the event's performance (MATCH). Due to the expectations of

WTP as a non-negative figure and at the same time with a large possible number of 0 offers, the Tobit model was applied, which opens the possibility of left-censorship (many zero number cases). This model is as follows [19]:

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

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

WTP indicates the WTP (PLN) variable, WTP\* is a hidden variable, X is a vector (horizontal) of explanatory variable values,  $\beta$  is a vector (vertical) of the regression equation parameters, and  $u_i$  determines random components of the equation. Statistical estimations were conducted using IBM SPSS Statistics ver. 28.0.1.0.

### Results

Although, as could be expected, most of the responses indicated a zero value (Fig. 1), the average WTP values remain relatively high and ranged between PLN 5.44 and PLN 59.07, depending on the analysed sporting event. This means that the organisation of sporting events, irrespective of their size, is vital for the host city residents. The range of offers proposed by respondents was the largest in the case of UEFA Euro 2012 – some exceeded the amount of PLN 1,000. In order to limit the occurrence of the so-called hypothetical bias resulting in the overestimation of the proposed WTP values, several solutions proposed in the recommendations of the National Oceanic and Atmospheric Administration (NOAA) report [20] were used.

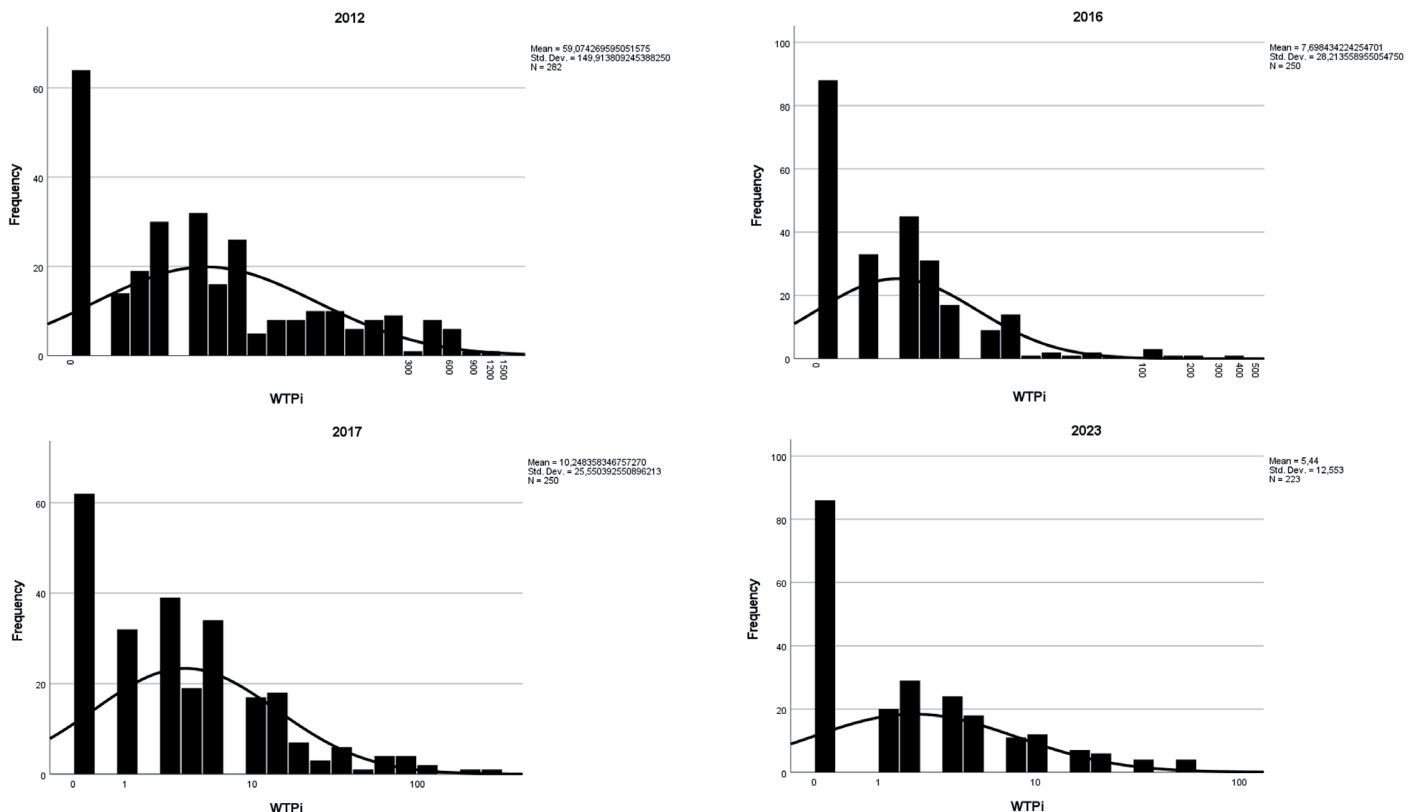


Figure 1. The frequency of occurrence of individual WTP offers depending on the sporting event



It should, therefore, be assumed that the proposed offers, although they concern a hypothetical market, express the actual level of utility resulting from the organisation of sporting events. The analysis of WTP determinants presented in Table 2 sheds some light on the importance of socio-economic factors and, above all, the significance of social impacts resulting from the organisation of sporting events of various sizes. Attention should be paid to the fact that there are significant statistical relationships between the level of WTP and inherent social effects. Regardless of the size and importance of the event, as well as the dedicated sport, respondents attributed importance to such effects. However, the most significant variation in this respect is the 2017 European Volleyball Championship, for which all social effects examined were indicated (SOCIAL, WELL, IDENTITY, SPORT, URBAN, HUMAN). One explanation is that volleyball is widespread, and Polish players are booming at club and national competitions. In the case of Euro 2012, a statistically significant and positive relationship occurred in four social dimensions, i.e., PSYCH, PROM, QUAL and LEGACY. At the time of the 2023 World Handball Championship, only one social effect was mentioned (SOCIAL), while during the 2016 European Handball Championship, in three cases (SOCIAL, WELL, IDENTITY), a statistically significant relationship between the reported amount of WTP and

social impacts was indicated. One possible reason for this difference was the better performance of the Polish national team in 2016 in comparison to 2023 (7th place and 15th place, respectively). However, it is not surprising that among the socio-economic determinants, the most frequently shown relationship is between the amount of the offer and income (INC) and interest in a sports discipline (INT\_D). The highest average value of WTP for Euro 2012 determines the highest aggregated value among all analysed sporting events – PLN 23.3 million (Tab. 3). However, if one compares it to the expenditures associated with constructing Arena Gdańsk stadium, it turns out to be not more than 2.5%. In other words, approx. 40 events of this size (MSE) would have to be organised to cover the expenses related to the preparation of the sporting venue. Interestingly, although smaller events show considerably lower aggregated values due to lower mean WTP values, they would foster the achievement of a faster return on investment, considering lower amounts of expenditure incurred for the preparation of Ergo Arena hall. Organising all three smaller sporting events in Gdańsk contributed to the aggregated value exceeding PLN 9 million. It is the equivalent of approximately 6% of the arena's construction costs covered by the city of Gdańsk (Tab. 4).

**Table 3.** The determinants of the WTP including social impacts in the case of different sporting events organised in Gdansk

Variables	2012 European Football Championship			2016 European Handball Championship			2017 European Volleyball Championship			2023 World Handball Championship		
	Coeff.	z-test	p-value	Coeff.	z-test	p-value	Coeff.	z-test	p-value	Coeff.	z-test	p-value
const	<b>-269.247</b>	<b>-6.965</b>	<b>&lt;0.0001</b>	<b>-37.5017</b>	<b>-4.060</b>	<b>&lt;0.0001</b>	<b>-30.5345</b>	<b>-3.698</b>	<b>0.0002</b>	-0.561166	-0.07770	0.9381
AGE	0.316096	0.7293	0.4658	-0.0176054	-0.1743	0.8616	0.0141992	0.1733	0.8624	<b>-0.152149</b>	<b>-2.100</b>	<b>0.0358</b>
GEND	3.44796	0.2370	0.8127	-1.16280	-0.3336	0.7387	-1.98562	-0.6953	0.4869	-1.17033	-0.4825	0.6295
EDU	-5.36880	-0.9142	0.3606	0.391532	0.2362	0.8133	<b>2.51184</b>	<b>1.993</b>	<b>0.0463</b>	0.414988	0.3812	0.7030
INC	<b>26.5131</b>	<b>8.073</b>	<b>&lt;0.0001</b>	<b>4.81326</b>	<b>5.012</b>	<b>&lt;0.0001</b>	<b>1.38794</b>	<b>2.023</b>	<b>0.0431</b>	0.143363	0.2403	0.8101
HHSIZE	<b>8.20904</b>	<b>1.694</b>	<b>0.0902</b>	-0.762454	-0.6428	0.5203	0.515970	0.5126	0.6082	-0.452164	-0.5662	0.5713
INT_D	<b>24.1990</b>	<b>2.383</b>	<b>0.0172</b>	<b>3.60491</b>	<b>2.067</b>	<b>0.0388</b>	1.58352	0.9466	0.3439	<b>2.51753</b>	<b>1.774</b>	<b>0.0760</b>
WATCH	<b>21.9439</b>	<b>2.195</b>	<b>0.0282</b>	3.00285	1.499	0.1338	1.38371	1.033	0.3017	0.189588	0.1662	0.8680
MATCH	<b>71.3221</b>	<b>2.256</b>	<b>0.0241</b>	-3.62714	-0.4536	0.6501	<b>12.3143</b>	<b>2.237</b>	<b>0.0253</b>	-2.11618	-0.3534	0.7238
PSYCH	<b>52.5612</b>	<b>3.732</b>	<b>0.0002</b>	-	-	-	-	-	-	-	-	-
PROM	<b>69.7705</b>	<b>4.231</b>	<b>&lt;0.0001</b>	-	-	-	-	-	-	-	-	-
QUAL	<b>61.4232</b>	<b>3.802</b>	<b>0.0001</b>	-	-	-	-	-	-	-	-	-
LEGACY	<b>38.6523</b>	<b>2.127</b>	<b>0.0334</b>	-	-	-	-	-	-	-	-	-
MOTIV	8.05372	0.3107	0.7561	-	-	-	-	-	-	-	-	-
INSPIR	31.2996	1.350	0.1770	-	-	-	-	-	-	-	-	-
SOCIAL	-	-	-	<b>14.5843</b>	<b>2.536</b>	<b>0.0112</b>	<b>15.2968</b>	<b>2.125</b>	<b>0.0336</b>	<b>12.3413</b>	<b>3.954</b>	<b>&lt;0.0001</b>
WELL	-	-	-	<b>14.7297</b>	<b>3.365</b>	<b>0.0008</b>	<b>33.0270</b>	<b>5.140</b>	<b>&lt;0.0001</b>	-2.22988	-0.5547	0.5791
IDENTITY	-	-	-	<b>20.8896</b>	<b>4.101</b>	<b>&lt;0.0001</b>	<b>26.8449</b>	<b>6.424</b>	<b>&lt;0.0001</b>	3.65605	0.8808	0.3784
SPORT	-	-	-	1.80910	0.2886	0.7729	<b>14.0268</b>	<b>3.423</b>	<b>0.0006</b>	-4.59875	-0.9967	0.3189
URBAN	-	-	-	8.17256	1.116	0.2646	<b>20.7425</b>	<b>4.825</b>	<b>&lt;0.0001</b>	-0.280347	-0.06456	0.9485
HUMAN	-	-	-	8.36413	1.207	0.2275	<b>10.9757</b>	<b>2.381</b>	<b>0.0172</b>	-3.49962	-0.6661	0.5053
Chi-square	201.0801			86.44717			88.75388			25.10145		
Log likelihood	-1342.384			-793.0421			-869.1411			-633.1357		
Akaike crit.	2716.769			1618.084			1770.282			1298.271		
Hannan-Quinn crit.	2740.136			1640.761			1792.959			1320.279		



**Table 4.** Aggregated values of WTP in comparison with the construction expenditures of sporting venues in Gdansk

Sporting venue	The cost of construction [mln PLN] <sup>a</sup>	Aggregated values									
		2012 European Football Championship		2016 European Handball Championship		2017 European Volleyball Championship		2023 World Handball Championship		Total	
	PLN million	PLN million	% of construction cost	PLN million	% of construction cost	PLN million	% of construction cost	PLN million	% of construction cost	PLN million	% of construction cost
Arena Gdańsk	943.7	23.3	2.47 %	-	-	-	-	-	-	23.3	2.47%
Ergo Arena	151.1	-	-	3.03	2.0%	4.02	2.66%	2.16	1.43%	9.21	6.09%

a – the cost incurred exclusively by the city of Gdańsk adjusted to 2023.

## Discussion

The research results indicate that sporting events, irrespective of their size, determine the occurrence of social impacts among host city residents. It confirms a relationship between sporting events and positive social effects, including but not limited to the feel-good factor, national pride and sports participation [27, 28]. By finding a monetary valuation of these intangible effects, at least partially, it is possible to justify the spending of public funds on such events. Although higher mean WTP values, and consequently higher aggregated values, were observed for MSE, smaller sporting events seem to have more significant potential for host cities [K1]. The advantage of smaller events over MSE consists in the lack of requirement to own an often oversized sports facility, most frequently not adapted to the needs of the local community and therefore becoming “a white elephant” [22, 23, 24]. The organisation of smaller events is less expensive, while the event itself is more affordable for host city residents due to lower ticket prices [25, 26]. Interestingly, social benefits may become more apparent in the case of smaller events because they may occur in a given city more than once [21]. This is the case of Gdańsk, where after organisational success of MSE (UEFA Euro 2012), other large, albeit not mega, sporting events were hosted [29]. In the case of Gdańsk, the construction of Ergo Arena hall, where smaller events were held, was a smaller burden on the Gdańsk’s budget than the football stadium – Arena Gdańsk – used during the Euro 2012. Therefore, even lower mean WTP values can determine a correspondingly higher share of intangible benefits regarding tangible expenditure on the preparation of a sporting venue. In addition, the probability of organising another large but not mega sporting event is much higher than an MSE. In the last few years alone, Ergo Arena in Gdańsk was the venue of sporting competitions including, but not limited to, the 2013 Men’s European Volleyball Championship (in cooperation with Denmark), the 2014 World Athletics Indoor Championships and 2014 Men’s Volleyball World Championships. The organisation of MSEs by Gdańsk (or any other city worldwide) with such a frequency sounds far-fetched.

## Conclusions

In this paper, sporting events of different sizes organised in the same city were compared regarding the valuation of intangible social impacts. The findings have implications for policymakers since they indicate that the organisation of smaller sporting events seems more straightforward to justify. On the one hand, they are not so expensive, and, on the other hand, they can contribute to achieving significant benefits resulting from intangible effects, such as social impacts. Moreover, Gdańsk is expected to organise other large sporting events soon since Po-

land has been announced to host the EuroBasket 2025 as well as 2027 Volleyball World Championships. Nevertheless, some study limitations should be taken into account. Above all, only social benefits were considered. The potential social costs were neglected. However, it is known that the organisation of sporting events may have adverse effects. Noise, violence, vandalism, urban degradation, conflicts and antagonism between visitors and residents are possible, albeit not limited examples. Only their inclusion in the proposed valuation would allow them to secure the total value of social net effects, which is likely lower than the one indicated in this study. On the other hand, this course of action would be beneficial for smaller events, the organisation of which does not lead to as many negative social impacts as may be visible for MSEs. To sum up, the response to the title question should be considered affirmative.

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Submitted: October 6, 2023

Accepted: December 20, 2023

