

The value of sporting success to Germans: Comparing the 2012 UEFA Championships with the 2012 Olympics

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Abstract We examine the value of sporting success to the German population at two major sport events in 2012, the UEFA European Championships and the London Olympic Games. Primary data were collected with a nationwide online survey of the German population ($n = 359$). Using the contingent valuation method (CVM), this study is the first to compare the value of sporting success between two events. The weighted results show that 57.5 % of the respondents stated a positive (>0) willingness-to-pay (WTP) for winning the European Championships title and 40.6 % for the first place in the Olympic medal table. Conversely, the findings indicate a lower average WTP for winning the European title in football (€40.74) than for Germany being ranked first in the Olympic medal table (€46.47). Regression analyses indicate that middle-aged individuals with low expectations of a good German result, low identification with the national team, but high personal importance that the team does well stated a significantly higher WTP for winning the title at the European Championships. For the first place in the medal table, females with a lower educational level, little interest in sports in general but high interest in the Summer Olympics including watching the Games, high expectations of a good German result, and a high identification with the German team reported a significantly higher WTP.

Keywords Contingent valuation method · Public goods · Sport event · Sporting success · Willingness-to-pay

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1 Introduction

2012 has been a year of major sport events in Europe: In June and July, the UEFA European Championships in football took place in Poland and the Ukraine reaching millions of spectators in stadiums, at home, and at public viewing places. From 27th of July to 12th of August, the Olympic Summer Games were held in London and the British fans showed strong and enthusiastic support for their team. Crowds cheered for athletes and fans from all over the world celebrated the Games on the street. Thus, sport events and sporting success create what economists call positive externalities and public goods (Johnson 2008; Wicker et al. 2012b). Compared with other types of goods like private goods (e.g., running shoes), the main characteristics of public goods are that there is no rivalry in consumption and that nobody can be excluded from consumption (Downward et al. 2009). In the context of sport events, this means that nobody can be excluded from talking about the events, from cheering for athletes, and from celebrating a country's sporting success.

Generally speaking, the effects of sport events can be divided into a tangible and an intangible component. The tangible component refers to aspects like physically attending the event, sitting in the stands, travelling to the destination, and spending money in the city. This component has been investigated in abundance in previous economic impact studies (e.g., Gratton et al. 2006), mainly to justify government spending on such events. However, researchers have suggested looking beyond direct economic impact (Walker and Mondello 2007). The intangible component captures all the above mentioned aspects like talking about the event and cheering, i.e., the created public goods. Previous research has stressed the importance of intangible and social effects of sport events (e.g., Süßmuth et al. 2010). In fact, the intangible component was found to be of higher value to people than the tangible component (Castellanos et al. 2011; Johnson et al. 2001). This means that people put more value on celebrating sporting success and talking about sport than on the actual sport consumption of sitting in the stadium.

This notion should be of interest to policy makers given the discussion that has evolved after the Games in many countries which did not collect as many medals as expected. For example, in Germany a discussion came up after the German Olympic Sports Confederation had to release the initial medal targets. With the 44 medals (11 gold medals) the German team clearly missed the medal target of 86 medals (28 gold medals; Spiegel-Online 2012). While this medal target was considered unreasonable, it was also discussed whether countries would need sporting success and whether they should define themselves over medals and titles (Terbuyken 2012). Nevertheless, it was acknowledged that governments attribute importance to sporting success (Green and Houlihan 2005). Although a bit overshadowed by the discussion regarding the Olympic Games, the Germans are still disappointed because they did not win the title at the UEFA European Championships. At the time, the German national coach still had to defend himself and his strategy for the

lost semi-final (SF) against Italy. The 2014 World Cup title was not foreseeable but may have been a partial compensation for some Germans. Importantly, in professional team sports economic success depends on sporting success (Littkemann and Kleist 2002). The above examples raise questions about the importance of sporting success to a nation.

The purpose of this study is to examine the value of sporting success to the German population by comparing the 2012 UEFA European Championships and the 2012 London Olympic Games. In detail, this study advances the following two main research questions: First, what value does the German population attribute to sporting success at the UEFA European Championships and the London Olympic Games? And second, what factors determine the value of sporting success? The contingent valuation method (CVM) is used to measure the value of sporting success. Primary data are collected using a nationwide online survey of the German population ($n = 359$). This study is the first to compare the value of sporting success between two events. It contributes to the body of research on the monetary value of sporting success and more generally to the literature on valuing intangible goods.

2 Theoretical framework and literature review

2.1 Sporting success and its economic relevance

Most studies showed that national sporting success is associated with positive effects for the population with a few exceptions (Kavetsos and Szymanski 2010). For example, it was reported that sporting success can create a general *feel-good factor* among the population (Forrest and Simmons 2003). People find sporting success important for the reputation of their country (Wicker et al. 2012a), also because it creates feelings of national and civic pride (Allison and Monnington 2002; Humphreys et al. 2011). Moreover, it has a unifying component because it can foster local and national unity as well as social cohesion (Castellanos et al. 2011; Johnson 2008; Süßmuth et al. 2010). Yet, it must be stressed that the effects of sporting success in terms of increased well-being and national pride are rather short term and small (Elling et al. 2014).

While happiness is a personal feeling, the happiness of millions of people is also politically relevant and the creation of it by one sport event can be considered a public good. Moreover, feelings created by national sporting success can be economically relevant. There are at least two arguments that can be advanced in this regard. First, Dohmen et al. (2006) conducted a study in Germany in the context of the 2006 Football World Cup. They related the happiness derived from sporting success to economic aspects. Telephone surveys of the German population were conducted before and after matches of the German national team. They found evidence that seemingly irrelevant events like sport events respectively sporting success at these events had a significant effect on how people evaluated their own economic situation and the economic situation of the country. People were significantly more satisfied with their personal economic situation and the economic

situation of their country after the German national team had won a match at the 2006 Football World Cup. Dohmen et al. (2006, p. 9) stated that their findings “make a strong case for the conjecture that much of the economic action is driven by ‘psychology’—a view going back at least until Keynes”. In other words, perceptions of economic conditions can be considered critical determinants of macroeconomic outcomes. Thus, the public goods produced by sporting success are economically relevant because they positively affect these perceptions. Up to now research has not yet examined the economic consequences when expectations of sporting success are not fulfilled.

Second, sport events and specifically matches of major soccer tournaments like the Football World Cup and European Championships are typically watched in a group setting. People go to public viewing places, watch games in restaurants and bars, or at home together with friends and relatives. At all these places people get in contact with other people. Through the lens of social capital theory (Putnam 1993), meeting other people is referred to as informal participation in civil society which is one dimension of the concept of social capital. Generally speaking, social capital is referred to as “features of social organization, such as trust, norms, and networks” (Putnam 1993, p. 167). Thus, social capital is created when people watch sports events together. The interactions among people and the associated creation of social capital may even be higher when the team they support is successful because then people can celebrate together. A nation’s stock of social capital is economically relevant because it reduces transaction costs (Fukuyama 1995) and was, therefore, found to contribute positively to economic development (Knack and Keefer 1997).

2.2 Experienced utility and willingness-to-pay (WTP)

The concept of experienced utility is used as a theoretical frame for the present research. Generally speaking, consumers may derive utility from national sporting success. Since the utility is based on the experience of watching sport and the results created by others, it is referred to as experienced utility (Frey 2008) as opposed to decision utility measured by one’s own decisions. Following Pawlowski et al. (2014) the concept of experienced utility is critical to happiness and subjective well-being respectively. Since different individuals have different experiences and value the same results differently, the experienced utility is subjective. Consequently, the importance of sporting success differs among consumers: While sporting success may be very important to some consumers who are desperate when their team or athlete did not win, it may be less important to others.

A consumer’s utility can be expressed through his/her WTP (Becker et al. 1964). The higher an individual’s subjective utility from sporting success, the higher should be his/her WTP. In addition to individual differences in experienced utility and resulting WTP, the type of sporting success, i.e., the actual sporting result may influence utility as well. For example, consumers may experience a higher utility if their favorite athlete wins a gold medal than a silver medal. Similarly, consumers may have a higher utility when their team reaches the final than when it is eliminated in the quarter finals. Thus, the better the result, the higher is an individual’s utility and the higher the resulting WTP. This assumption is supported

by previous research on sporting success at the 2006 Football World Cup where the WTP increased from the quarter-final (QF) to the SF, and again to the final (Rätzel and Weimann 2006).

2.3 Measuring the value of sporting success: the contingent valuation method (CVM)

A few studies attempted to measure the value of sporting success. Recall that sporting success creates public goods; the common method to estimate the value of public goods is the CVM (e.g., Johnson and Whitehead 2000). Applying CVM, the respondents are presented with a hypothetical scenario and are asked to state their WTP for the hypothetical outcome specified in the scenario (Mitchell and Carson 1989). The CVM is a method used for placing monetary value on goods that are not sold in the market place (Carson 2000). The CVM has been used in many research areas including environmental services and national parks (for an overview see Walker and Mondello 2007). Recently, it has also been applied in the sports industry to estimate the value of public goods created by sport teams (e.g., Johnson and Whitehead 2000; Johnson et al. 2001), the value of hosting sport events (e.g., Walton et al. 2008), the value of amateur sport programs (e.g., Johnson et al. 2007; Wicker 2011), and the value of sporting success (e.g., Humphreys et al. 2011; Wicker et al. 2012b).

Despite its wide application, this method has been controversially discussed. The main criticism of CVM relates to the potential of a hypothetical bias (e.g., Walker and Mondello 2007). A hypothetical bias is present when respondents tend to overestimate their WTP because of the hypothetical nature of the CVM scenario. This means they would state a higher WTP than when they would have to purchase the good afterwards. The evidence regarding a hypothetical bias is mixed: some studies documented that the hypothetical WTP would exceed the actual WTP supporting the presence of a hypothetical bias (e.g., Loomis et al. 1996). Other studies could not find a significant difference between stated and actual WTP (e.g., Carlsson and Martinsson 2001). Altogether, the CVM was considered valid when comparing WTP statements resulting from different methods including auctions and conjoint analyses (e.g., Miller et al. 2011). Consequently, the CVM can be considered an appropriate method to estimate the value of sporting success.

2.4 Evidence on the value of sporting success

Research into the value of sporting success has received increased academic attention over the last years. An overview of these studies is presented in Table 1. Interestingly, most valuation studies were conducted in Germany although the German national football team has not won any major title since the 1996 European Championships (note that the present study was conducted before the German team won the 2014 Football World Cup). Moreover, the number of medals won at Olympic Games has constantly decreased in the decade after the German reunification in 1990.

Table 1 Overview of studies examining the value of sporting success (in chronological order)

Author, country	Research question	Empirical design	Main results
Rätzel and Weimann (2006), Germany	To examine the WTP and WTA for sporting success at the 2006 Football World Cup	Representative sample of German households ($n = 338$); respondents asked for their WTP for different outcomes and WTA a German defeat in the final	Mean WTP is €5.26 (QF), €7.04 (SF), €10.78 (final), €34.97 (win); WTA €255.34
Humphreys et al. (2011), Canada	To examine the amount and drivers of WTP for sporting success at the 2010 Winter Olympics	Telephone survey of Canadians before ($n = 1,540$) and after the Olympics ($n = 1,660$); respondents asked for their WTP (annual income tax surcharge) for the <i>Own the Podium</i> program	Marginal value of an additional gold medal was \$13.26 (pre) and \$25.91 (post); prestige, medal expectations, income, and age influence WTP
Wicker et al. (2012a), Germany	To examine the amount and drivers of WTP for sporting success at the 2012 Summer Olympics	Online and written survey of Germans, convenience sample ($n = 3,049$); respondents asked for their WTP that Germany wins the World Cup	46.7 % stated a WTP; mean WTP is €25.79 overall and €56.67 of those who stated; consumption capital and socio-demographics influence WTP
Wicker et al. (2012b), Germany	To examine the amount and drivers of WTP for winning the 2010 Football World Cup	Representative telephone survey of the German population ($n = 2,006$); respondents were asked for their WTP for Germany being ranked first in the final medal table and for a gold medal in track and field	Mean WTP is €6.13 (medal table) and €5.21 (track and field); consumption capital, happiness, fairness, and socio-demographics influence WTP
Flatau and Rohkohl (2013), Germany	To examine the amount and drivers of WTP for sporting success at the 2016 Summer Olympics	Online survey of participants of the Socio-Scientific Panel (SoSci Survey 2014; $n = 378$); respondents were asked whether and how much they would be willing to pay in higher taxes to increase the likelihood of medals	Mean WTP is €5.29; WTP significantly determined by perceived utility and economic factors
Wicker et al. (2014), Germany	To examine the amount and determinants of WTP for sporting success of Football Bundesliga teams	Online survey of fans and people living in the region of 28 teams of the 1st, 2nd, and 3rd Football Bundesliga ($n = 7,721$); WTP (through fan bonds) for a positive (promotion/qualification) and negative scenario (relegation) assessed	62 % (neg.) resp. 61 % (pos.) stated a WTP; mean WTP is €427 (neg.) and €411 (pos.); both use and non-use variables affect WTP in the negative and positive scenario

Two studies have been conducted in the context of Football World Cups. Rätzl and Weimann (2006) analyzed the WTP of the German population for winning the 2006 World Cup. The findings showed that the Germans were willing to pay on average €34.97 for winning the World Cup. Interestingly, people were also asked for their willingness-to-accept (WTA) a defeat of the German team in the final. The WTA was considerably higher (€255.34) than the WTP estimates. The authors concluded that there would be no substitute for a World Cup title and that an aggregate €17 billion would be necessary to achieve collective indifference about the outcome of the World Cup final (Rätzl and Weimann 2006). Another German study examined the value of sporting success at the 2010 Football World Cup in South Africa (Wicker et al. 2012b). The average WTP for winning the World Cup title amounted to €25.79. When considering only those respondents who stated a WTP higher than zero, average WTP was €56.67.

Wicker et al. (2014) examined the WTP for sporting success of teams playing in the Football Bundesliga. Positive and negative scenarios were presented to respondents who were then asked for their likelihood of purchasing fan bonds to achieve the hypothetical outcome or avoid the scenario from occurring. On average, people stated they would be willing to purchase fan bonds with a face value of €411 (positive scenario) and €427 (negative scenario) respectively. Similar to Rätzl and Weimann (2006), the WTP to avoid a negative outcome is higher than for the achievement of a positive outcome. Since fan bonds represent an investment, people were asked whether they planned to redeem the bonds; only 17 % (positive) and 18 % (negative), respectively, planned to do so indicating that the provision of money was more of a donation than an investment.

Three studies examined the value of medal success at Olympic Games. The Canadian study by Humphreys et al. (2011) was conducted in the context to the *Own the Podium* program. This program had been introduced by the Canadian government before the Vancouver Olympics to increase Canada's medal count (Canada had never won an Olympic gold medal on home soil). A survey was conducted before and after the Games. Respondents were presented with a hypothetical scenario and asked about the financial contribution of their household to finance this program. The Pre-Olympics WTP per household amounted to \$44.96 and was thus lower than the Post-Olympics WTP of \$91.42. The aggregate value of the intangible benefits created by the *Own the Podium* program was estimated to range between \$719 million and \$3.4 billion.

A German study looked at the value of medal success at the 2012 London Olympic Games (Wicker et al. 2012a). The results showed that the average WTP for Germany achieving the first place in the final medal table amounted to €6.13. The average WTP for Germany winning a gold medal in track and field was €5.21. The researchers acknowledged that the relatively low WTP estimates may be due to the fact that the study was conducted more than 1 year before the start of the Games. People may not have been too enthusiastic about the Games at that time. Flatau and Rohkohl (2013) examined the WTP of German population for medal success at the 2016 Summer Olympics. Their study also revealed relatively low WTP values ($M = €5.29$) for improving the medal performance of the German team. Yet, the survey was conducted in 2013 and thus far ahead of the 2016 Rio Games.

The above studies provided evidence that sporting success of national teams and athletes has a certain value to the population which can be measured using CVM. However, the CVM estimates can be hardly compared because of different samples which may lead to different results. The question remains whether Olympic medals or football titles are of higher value to the population respectively how big the margin is. The body of research would benefit from a comparative study that allows contrasting the WTP for sporting success in football with the WTP for sporting success at the Olympic Games. The present study attempts to analyze this research question that has not yet been addressed.

2.5 Determinants of willingness-to-pay

In accordance with the concept of subjective utility, the perceived value of sporting success is assumed to differ among individuals. This value is measured through an individual's WTP. Several factors may be used to explain differences in WTP among individuals. These factors can be summarized into consumption-related factors, expectations, and intangible factors. They are presented and discussed in the next paragraphs.

First, it is assumed that the consumption of sport plays a role with regard to an individual's WTP. The concept of consumption capital (Stigler and Becker 1977) can be used to conceptualize the effect of sport consumption on WTP for sporting success. Generally speaking, individuals increase their consumption capital through the repetitive consumption of similar products. Applying this concept to sports means that individuals can increase their sport-specific consumption capital through taking exercises or watching sport events. Regarding active sport participation, individuals can improve their technical skills, tactics, endurance, etc. through playing sport themselves. Moreover, consumption capital can also be increased through passive sport consumption (spectator sport). For instance, individuals who watch sport in the stadium or on television improve their knowledge about players, teams, and rules (Wicker et al. 2012b).

It is suggested that an increase in consumption capital is associated with increasing utility: the higher the consumption capital, the higher is the subjective utility. For example, individuals who have just started playing a sport like tennis may not derive a high utility from sport consumption when they are hardly able to hit the ball properly or to deliver a service. Utility from tennis consumption may increase with increasing number of tennis lessons because tennis skills get better and playing tennis is more enjoyable. The same applies to spectator sport. Subjective utility will be low when individuals watch games, but do not know any rules, or when they hardly know any players or teams. Utility will increase with increasing knowledge of rules and players which makes watching games more enjoyable. When individuals are more familiar with teams and players the outcome of the sporting contest matters more to them, i.e., sporting success matters. Previous research confirmed that interest in sport (Rätzl and Weimann 2006) and active sport participation (Wicker et al. 2012b) were positively correlated with WTP for sporting success. Consequently, the value of sporting success should increase with increasing consumption capital.

Second, expectations about the outcome of sport events may influence an individual's WTP. Generally speaking, expectations are formed by previous experience (Carman 1990). They are normative, i.e., they reflect the ideal standard of performance and the outcome that *should* be achieved (Parasuraman et al. 1990). For example, individuals who have watched previous football Championships or Olympic Games know about the strengths and weaknesses of the German team. Individual utility (and WTP) will increase with increasing expectations. If individuals have high expectations because they anticipate that their team will perform well, they also have a higher utility from sporting success, i.e., from seeing the team performing well. This assumption is supported by previous research documenting that expectations about future performances of athletes had a significantly positive impact on WTP for medal success (Humphreys et al. 2011). Consequently, this study assumes that the higher the expectations, the higher the WTP for sporting success.

Third, intangible factors such as identification and importance of sporting success may influence WTP. Previous research has shown that identification with the country and identification with the national team had a positive influence on WTP. Also, individuals considered sporting success important to their country and to themselves (Wicker et al. 2012b). In a survey that was conducted before the 2010 Vancouver Olympics, most Canadians stated that they find it important that Canadians win the most gold medals, that Canadians win more gold medals than US athletes, and that the medal count would be important to Canada's standing in the world. The latter also had a positive effect on WTP for medal success (Humphreys et al. 2011). Similarly, a German study showed that the personal and national importance of sporting success were positively associated with WTP (Wicker et al. 2012b). Consequently, this study assumes that identification with the country and the national team as well as personal and national importance of sporting success positively impact WTP.

3 Data and method

3.1 Data collection

Primary data were collected using an online survey from March 20 to June 7, 2012. Thus, the survey finished the day before the 2012 UEFA European Championships started. Before the link was published, a pre-test was conducted and the questionnaire was revised accordingly. The conduction of the pre-test ensured the adequacy of the length of the questionnaire and the clarity and understandability of questions (Kuckartz et al. 2009). The link of the survey was published in several social online networks (e.g., Facebook, Xing, Twitter) as well as in the newspaper and an intranet called Learnweb of the University of Münster, Germany.¹ The

¹ Due to this approach, the sample is based on two different groups: people from the area of Münster and people from different social networks. Therefore, we tested with a Wilcoxon rank-sum test whether the WTP differs between these two groups. The results show that there are no significant differences.

survey was directed at people aged 16 years and older because younger people are less likely to possess or earn own money. Therefore, it may be less adequate to present them with WTP questions since income was found to be a critical determinant of WTP (e.g., Humphreys et al. 2011; Johnson et al. 2001). Altogether, the convenience sample consisted of $n = 359$ people.

3.2 Measures and variables

The survey started with a short introduction. Participants were informed about the topic of the survey and were told that the survey was anonymous, that the data would be treated confidentially, and that the information they provide would only be used for scientific purposes. Moreover, it was mentioned that there would be no right or wrong answers. The questionnaire consisted of 38 questions that can be summarized in three areas, i.e., football, Olympics, and socio-demographic information. The variables used in this study are presented in Table 2.

Table 2 Overview of variables

Variable	Description	Scale
WTP_FOOT_QF	WTP that Germany reaches the quarter-final (in €)	Metric
WTP_FOOT_SF	WTP that Germany reaches the semi-final (in €)	Metric
WTP_FOOT_F	WTP that Germany reaches the final (in €)	Metric
WTP_FOOT_WIN	WTP that Germany becomes European Champion (in €)	Metric
WTP_OL_3	WTP that Germany takes the third place in the medal table at the London Olympics (in €)	Metric
WTP_OL_2	WTP that Germany takes the second place in the medal table at the London Olympics (in €)	Metric
WTP_OL_1	WTP that Germany takes the first place in the medal table at the London Olympics (in €)	Metric
SPORTP	Regular sport participation (at least once per week; 1 = yes)	Dummy
INT_SPORT	Interest in sport in general (from 0 = no interest at all to 4 = very strong)	Ordinal
INT_FOOT	Interest in football (from 0 = no interest at all to 4 = very strong)	Ordinal
INT_OL	Interest in Summer Olympics (from 0 = no interest at all to 4 = very strong)	Ordinal
WATCH_FOOT	Watching the European Championships (1 = yes)	Dummy
WATCH_OL	Watching the 2012 London Olympic Games (1 = yes)	Dummy
EXP_FOOT	Expectation of German result (from 0 = eliminated after preliminary to 4 = win)	Ordinal
EXP_OL	Expectation of rank of Germany in final medal table	Ordinal
ID_GER	Identification with Germany (from 0 = not at all to 4 = very strong)	Ordinal
ID_FOOT	Identification with German national football team (from 0 = not at all to 4 = very strong)	Ordinal
ID_OL	Identification with German Olympic team (from 0 = not at all to 4 = very strong)	Ordinal
NATIMP_FOOT	Importance to country that the football team does well (from 0 = not at all to 4 = very important)	Ordinal

Table 2 continued

Variable	Description	Scale
NATIMP_OL	Importance to country that the Olympic team does well (from 0 = not at all to 4 = very important)	Ordinal
PERSIMP_FOOT	Personal importance that the football team does well (from 0 = not at all to 4 = very important)	Ordinal
PERSIMP_OL	Personal importance that the Olympic team does well (from 0 = not at all to 4 = very important)	Ordinal
AGE	Age (in years)	Metric
AGE2	Age squared	Metric
GENDER	Gender of the respondent (0 = female, 1 = male)	Dummy
EDU	Highest educational level attained (from 1 = no secondary education to 7 = university degree)	Dummy
INC1	Personal monthly net income up to €1,000	Dummy
INC2	Personal monthly net income from €1,001 up to €2,000	Dummy
INC3	Personal monthly net income from €2,001 up to €3,000	Dummy
INC4	Personal monthly net income from €3,001 up to €4,000	Dummy
INC5	Personal monthly net income over €4,000	Dummy
INCN	Personal monthly net income not reported	Dummy
DAY_EURO	Number of days before the European Championships	Metric
DAY_OL	Number of days before the London Olympic Games	Metric

The survey started with a set of football questions including four different hypothetical scenarios of sporting success at the 2012 UEFA European Championships. The WTP questions were asked as follows: “Hypothetically, assume it would be possible, what is the maximum amount you would be willing to pay that the German national team reaches the QF at the 2012 UEFA European Championships?” (WTP_FOOT_QF). The same question was asked for the semi-final (WTP_FOOT_SF), final (WTP_FOOT_F), and winning the title (WTP_FOOT_WIN). The WTP for sporting success at the London Olympics was assessed similarly: “Hypothetically, assume it would be possible, what is the maximum amount you would be willing to pay that the German Olympic team reaches the third (second, first) place of the medal table at the 2012 London Olympic Games?”

The consumption capital of individuals was assessed with six questions. Respondents were asked to indicate whether they practice sports regularly, i.e., at least once per week (SPORTP). The respondents’ level of interest in sport in general (INT_SPORT), in football (INT_FOOT), and in the Summer Olympics (INT_OL) was assessed with a five-point Likert scale (from 0 = no interest at all to 4 = very strong). In addition, respondents were asked whether they would watch the 2012 UEFA European Championships (WATCH_FOOT) and the 2012 London Olympic Games (WATCH_OL) on television, at the stadium, at public viewing places, or on the internet. Another two questions referred to their expectations regarding the sporting success of the German team at the UEFA European Championships (EXP_FOOT) and at the London Olympics (EXP_OL).

The questionnaire also contained questions about intangible factors. The respondents' level of identification with Germany (ID_GER), with the German national football team (ID_FOOT), and with the German Olympic team (ID_OL) was assessed on five-point Likert scales. Moreover, they were asked to state how important they find it for the reputation of Germany that the football team (NATIMP_FOOT) and the Olympic team (NATIMP_OL) perform well. Also, it was assessed how important it is to the respondents themselves that the German national football team (PERSIMP_FOOT) and the Olympics team (PERSIMP_OL) do well. The survey finished with a set of socio-demographic questions asking for an individual's age (AGE), gender (GENDER), educational level (EDU), and monthly net income (INC). Age squared (AGE2) is calculated to control for quadratic effects of age.

3.3 Sample structure and weights

The age distribution of our initial sample indicates that respondents are on average 29.46 years old with age ranging from 16 to 81 years. Regarding gender, 45.54 % of the respondents are females and 54.46 % males. Thus, younger people and males are overrepresented in the present sample compared with the German population in 2012 where only 30.26 % of people were 30 years or younger and the share of females aged 15 years and older was 51.46 % and (own calculations based on Regionalstatistik 2012). These discrepancies between the present sample and the overall population can be addressed using weights. We weighted our sample by age and gender to make it more representative of the German population. Weights were calculated using information about the German population by age and gender in 2012 (Regionalstatistik 2012).

Regarding the sample structure another issue must be considered. Like many voluntary surveys on specific topics this study shares the problem of self-selection since people who are more interested in sport may have been more likely to self-select into the sample. The relatively high share of people (80.1 %) stating they would regularly participate in sport in our initial sample supports this assumption. Sport participation studies reveal that males and younger people are more likely to participate in sport (e.g., Downward and Rasciute 2010). Since the weights address the problem of overrepresentation of males and younger people, the overrepresentation of people interested in sport should also be mitigated using these weights.

The descriptive statistics of the initial and weighted sample are presented in Table 3. In the weighted sample, the share of people who report regular participation in sport is slightly lower but still at 74.43 %. Thus, the weighting procedure has partially mitigated the self-selection of sportive people into the sample but the percentage of regularly active people is still relatively high. The representative German Socio-Economic Panel (GSOEP) has a rate of exercising at least once a week of only 37.1 % in 2011. However, the study of Hallmann et al. (2011) reported weekly participation rates of 75.7 % for Munich and of 71.1 % for medium-sized municipalities although the samples were representative in terms of age, gender, and migration background, too.

Table 3 Descriptive statistics of socio-demographic, consumption capital and intangible factors (initial and weighted sample)

Metric/ordinal variables	Obs.	Mean	SD	Min	Max	Weighted mean ^a	Weighted SD ^a
INT_SPORT	313	2.55	1.01	0	4	2.87	0.87
INT_FOOT	256	2.47	1.24	0	4	2.62	1.12
INT_OL	291	1.77	1.08	0	4	2.51	1.12
EXP_FOOT	308	3.98	1.12	1	5	3.74	1.25
EXP_OL	256	4.83	2.34	1	17	5.41	2.38
ID_GER	314	2.55	0.81	0	4	2.63	0.85
ID_FOOT	308	2.40	1.12	0	4	2.18	1.11
ID_OL	300	1.48	1.05	0	4	1.71	1.18
NATIMP_FOOT	313	1.81	1.05	0	4	1.72	1.26
NATIMP_OL	302	1.45	0.98	0	4	1.43	0.98
PERSIMP_FOOT	312	2.17	1.24	0	4	1.77	1.27
PERSIMP_OL	302	1.31	1.09	0	4	1.30	1.09
AGE	310	29.46	10.36	16	81	44.07	13.43
AGE2	310	974.72	872.97	256	6,561	2,121.62	1,113.34
EDU	307	6.08	1.35	2	7	4.90	1.82
DAY_EURO	315	42.22	17.69	1	72	37.55	17.84
DAY_OL	315	89.22	17.69	48	119	84.55	17.84
Dummy variables	% of respondents			Weighted % of respondents ^a			
INC1	315	40.32		13.51			
INC2	315	26.98		47.13			
INC3	315	11.43		20.80			
INC4	315	3.81		6.76			
INC5	315	3.50		1.65			
INCN	315	13.97		10.15			
SPORTP	307	80.13		74.43			
WATCH_FOOT	313	90.10		96.83			
WATCH_OL	302	30.79		7.65			
GENDER (1 = male)	314	54.46		48.53			

^a Weighted values were calculated after a listwise deletion of missing values and are, thus, based on 165 cases

Besides the self-selection of respondents who are more interested in sports to answer surveys like ours, some people consider activities like walking the dog, garden work, or cycling to work as sports, while others do not. Moreover, considering such activities as sport may also be a result of the social recognition of sport. Since it is generally respected to work out, respondents have an incentive to report such a behavior, especially in surveys about sports. This phenomenon is referred to as *social desirability* (e.g., Fisher 1993): respondents are more likely to report socially desirable answers, particularly when the survey is about this specific

topic (like it is the case in this research). Although social desirability may also be an issue in general household surveys like the GSOEP the problem may be smaller there because these surveys usually cover a wide range of topics. Nevertheless, this issue should not be overstated as the empirical results in the next section do not show any statistically significant effects of regular sport participation.

The summary statistics of the weighted sample further show that respondents are highly educated ($M = 4.90$ on a 7-point scale; 5 is equivalent to A-levels). The income distribution indicates that the majority of respondents (47.13 %) have a monthly net income between €1,001 and €2,000 at their disposal. With regard to consumption capital, the respondents' interest in sports is on average higher ($M = 2.87$) than their interest in football ($M = 2.62$) and in the Summer Olympics ($M = 2.51$). Altogether, 96.83 % of respondents say that they will watch the European Championships, while only 7.65 % plan to watch the London Olympics. On average, the level of identification with Germany ($M = 2.63$) is higher than the level of identification with the German national football team ($M = 2.18$) and the German Olympic team ($M = 1.71$). The personal importance of the German team doing well is slightly higher than the perceived national importance for football ($M = 1.77$ vs. 1.72), while the national importance is perceived as slightly higher for the Olympics ($M = 1.43$ vs. 1.30). On average, the respondents expect the German Olympic team to end up between fifth and sixth place ($M = 5.41$) in the final medal table, while the German national football team is expected to reach the final ($M = 3.74$).

3.4 Data analysis

The data analysis consisted of three main steps. First, the data were checked for content validity and plausibility. Specifically, the WTP data were checked for plausibility. There are several ways how implausible data can be treated. In line with Kuckartz et al. (2009) we decided to exclude implausible cases. One case was considered implausible when WTP was higher than the monthly income of the respondent. Another reason for excluding cases is the hypothetical bias. All cases with $WTP > €500$ were removed to mitigate the presence of hypothetical bias (Wicker et al. 2012b). Altogether, 44 cases (12.26 %) were excluded from the sample. Second, average WTP by age group is extrapolated to answer the first research question. These extrapolations provide information about the value of sporting success to the German population. They are based on the weighted mean values in Table 4.

Third, regression analyses are estimated to identify the determinants of WTP (and to answer the second research question). Tobit regressions were chosen because of the high share of zeros and the fact that the remaining WTP values are greater than zero (Wooldridge 2006). Altogether, seven Tobit models were estimated²; four for the UEFA European Championships and three for the London

² The WTP for the European Championships and the Olympic medal table could also be jointly determined. This would require an alternative econometric approach, such as a seemingly unrelated regression analysis.

Table 4 Descriptive statistics of WTP variables (initial and weighted sample)

Metric/ordinal variables	Obs.	Mean	SD	Min	Max	Weighted mean ^b	Weighted SD ^b
WTP_FOOT_QF	281	7.69	19.75	0	200	10.38	16.94
WTP_FOOT_SF	281	13.17	31.45	0	300	16.90	25.61
WTP_FOOT_F	282	20.74	49.94	0	500	25.96	39.53
WTP_FOOT_WIN	283	35.33	77.92	0	500	40.74	71.98
WTP_OL_3	266	7.35	36.65	0	500	18.58	37.14
WTP_OL_2	267	10.31	42.35	0	500	32.70	64.63
WTP_OL_1	267	15.26	53.13	0	500	46.47	94.10
Dummy variables ^a		% of respondents			Weighted % of respondents ^b		
WTP_FOOT_QF_D	281	37.01				49.53	
WTP_FOOT_SF_D	281	41.99				51.93	
WTP_FOOT_F_D	282	48.23				54.11	
WTP_FOOT_WIN_D	283	55.83				57.54	
WTP_OL_3_D	266	24.06				38.21	
WTP_OL_2_D	267	25.09				38.44	
WTP_OL_1_D	267	31.09				40.60	

^a The Dummy variables (denoted with _D) measure whether people stated a WTP > 0 (1 = yes)

^b Weighted values were calculated after a listwise deletion of missing values and therefore based on 165 cases

Olympics. The four WTP_FOOT variables serve as the dependent variables in the first set of models, while the three WTP_OL variables represent the dependent variables in the second set of models. The respective football and Olympics variables as well as the socio-demographic characteristics (Table 1) were entered as independent variables. The models also control for the days between the completion of the questionnaire and the first day of the 2012 UEFA European Championships and the London Olympics respectively. Respondents may receive more information about the event due to increased media attention the closer it gets.

4 Results and discussion

The descriptive statistics of the WTP variables (Table 4) show that in the weighted sample 49.53 % of the respondents stated a positive WTP (>0) for reaching the QF, 51.93 % for reaching the SF, 54.11 % for reaching the final, and 57.54 % for winning the title. In the case of the London Olympics, 38.21 % of the respondents stated a WTP > 0 for the third place in the medal table, 38.44 % for the second place, and 40.60 % for the first place. The relatively low percentages of people stating a positive WTP are in accordance with previous studies (Wicker et al. 2012a, b).

To give an overview of the original distribution of WTP, Fig. 1 shows the relative frequency of WTP for winning the title at the European Championships in the initial sample. Figure 2 displays the distribution of WTP for the first place in the

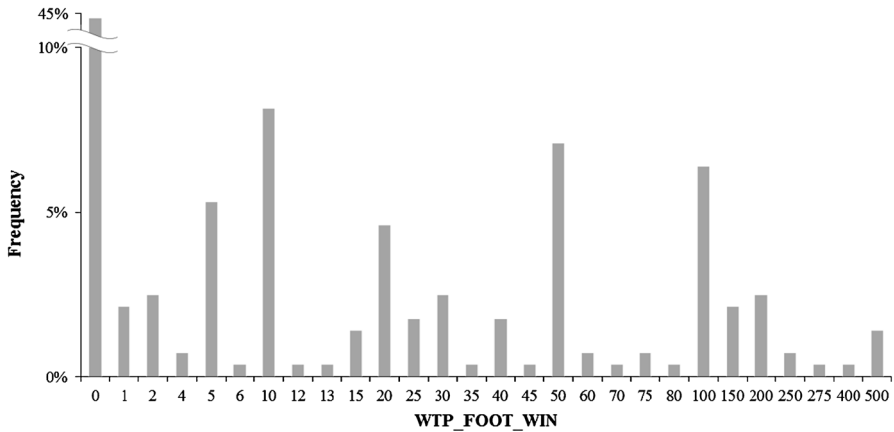


Fig. 1 Frequency distribution of WTP for the title at the European Championships in the initial sample (in Euro)

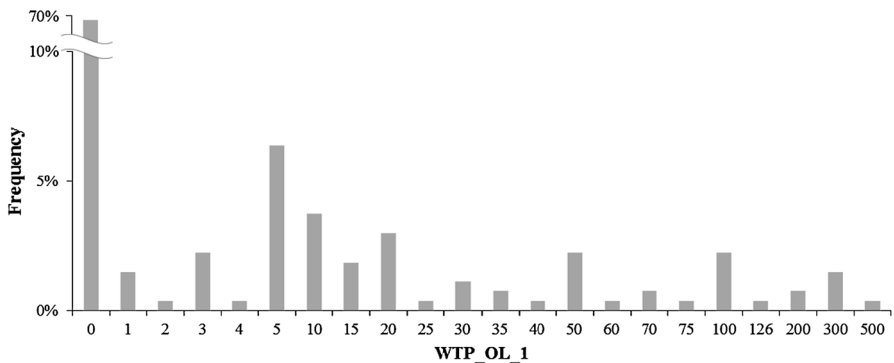


Fig. 2 Frequency distribution of WTP for the first place in the medal table at the London Olympics in the initial sample (in Euro)

medal table in the initial sample. The figures indicate that only a few people stated a WTP higher than €100.

The absolute WTP values (Table 4) reveal that respondents were willing to pay on average €10.38 for Germany reaching the QF at the UEFA European Championships, €16.90 for the SF, €25.96 for the final, and €40.74 for winning the title. A comparison with previous research (Wicker et al. 2012b; $M = €25.79$) shows that WTP has increased since the 2010 Football World Cup, probably because the German population has been waiting for an international title of the football national team for many years, in fact since 1996. Similar to previous research (Rätzl and Weimann 2006) WTP increases with increasing level of sporting success.

For the London Olympics the descriptive statistics of the weighted sample (Table 4) show that people were willing to pay on average €18.58 for the third

place, €32.70 for the second place, and €46.47 for the first place in the final medal table. Comparing the weighted means with the initial values indicates that applying weights led to a substantial increase in WTP for sporting success at the Olympics. The weighted mean values are even higher for the Olympics. This large increase could be due to older people, who were underrepresented in the initial sample, but were much more interested in the Olympics than younger people. A comparison with previous research (Wicker et al. 2012a; $M = €6.13$) shows that the WTP for the first place in the medal table at the London Olympics is higher in this study. This difference may be a result of the time of the survey: the survey of this study was conducted only a few months before the Olympics started, whereas the survey of Wicker et al. (2012a) took place 1 year before the Olympics. Thus, participants of this study may have been more informed and excited about the Games due to increased media attention.

A paired t test³ was used to check whether the evident differences in WTP for winning the UEFA European Championships and the first rank in the medal table at the London Olympics are statistically significant. This test indicated that the differences are not statistically significant ($p > 0.1$). Bivariate correlation analyses were also performed between the above mentioned WTP variables—they were not significant too.

In the next step, we extrapolated the weighted mean values of the WTP variables to determine the aggregated WTP of the German population (own calculations based on Regionalstatistik 2012). The results show that the aggregated WTP of the German population is €725 million for reaching the QF, €1.181 billion for reaching SF, €1.814 billion for reaching the final, and €2.847 billion for winning the title. In case of the London Olympics the aggregated WTP of the German population is €1.298 billion for the third place, €2.285 billion for the second place, and €3.247 billion for the first place in the final medal table. A comparison of both events shows that the German population was willing to pay more for the first place in the medal table at the Olympic Games than for winning the European Championships title. The same result can be observed for a comparison between the second (third) place in the medal table and reaching the final (SF).

Table 5 summarizes the determinants of WTP for sporting success at the 2012 UEFA European Championships. The variables EXP_FOOT and PERSIMP_FOOT influence WTP in all models significantly: the stronger the personal importance of sporting success in football and the lower the expectations, the higher the stated WTP. The positive effect of the personal importance of sporting success is in accordance with previous research (Wicker et al. 2012b). Contrary to previous research (Wicker et al. 2012b) ID_FOOT has a significantly negative impact on WTP in three models for the European Championships. It is likely that people with high identification believe more in victory than other people. This assumption is supported by a correlation coefficient of 0.47 for the variables ID_FOOT and EXP_FOOT. Watching the European Championships influences the WTP

³ We applied the (paired) t test because of its robustness (Bortz and Schuster 2010), although the data are not normally distributed. However, we compared the results of the paired t -test with the non-parametric Wilcoxon test and obtained similar findings.

Table 5 Summary of regression results for the 2012 UEFA European Championships (Tobit models; weighted sample; robust standard errors)

	WTP_FOOT_QF	WTP_FOOT_SF	WTP_FOOT_F	WTP_FOOT_WIN
Constant	-163.53 (-3.00)***	-249.49 (-3.74)***	-314.04 (-4.02)***	-490.66 (-3.60)***
INT_SPORT	3.67 (1.11) ⁺	5.39 (1.16) ⁺	6.26 (0.89) ⁺	15.54 (1.22) ⁺
SPORTP	-2.37 (-0.32) ⁺	-3.34 (-0.34) ⁺	-0.84 (-0.06) ⁺	-4.99 (-0.20) ⁺
INT_FOOT	-6.21 (-1.61) ⁺	-5.55 (-1.34) ⁺	-9.80 (-1.50) ⁺	-16.12 (-1.61) ⁺
WATCH_FOOT	26.14 (1.81)*	37.84 (1.87)*	54.12 (2.02)**	43.55 (1.22) ⁺
EXP_FOOT	-7.03 (-2.89)***	-9.90 (-2.91)***	-18.01 (-3.24)***	-22.24 (-2.56)**
ID_GER	-0.27 (-0.07) ⁺	0.92 (0.17) ⁺	4.91 (0.66) ⁺	7.55 (0.64) ⁺
ID_FOOT	-6.03 (-1.12) ⁺	-13.88 (-2.38)**	-18.76 (-1.80)*	-26.93 (-1.68)*
NATIMP_FOOT	-0.55 (-0.25) ⁺	-2.13 (-0.71) ⁺	-3.75 (-0.84) ⁺	-10.49 (-1.23) ⁺
PERSIMP_FOOT	22.53 (3.88)***	37.35 (5.41)***	55.40 (4.30)***	85.47 (4.07)***
AGE	10.45 (4.29)***	14.85 (5.11)***	19.80 (4.38)***	31.79 (3.52)***
AGE2	-0.13 (-4.45)***	-0.19 (-5.34)***	-0.25 (-4.34)***	-0.41 (-3.55)***
GENDER	-7.81 (-1.22) ⁺	-9.69 (-1.22) ⁺	-3.75 (-0.29) ⁺	19.40 (0.91) ⁺
EDU	-4.98 (-1.67)*	-6.33 (-2.12)**	-9.75 (-2.05)**	-15.96 (-1.61) ⁺
INC1	REF	REF	REF	REF
INC2	-8.13 (-1.04) ⁺	-0.96 (-0.09) ⁺	-5.49 (-0.35) ⁺	-6.94 (-0.25) ⁺
INC3	-2.27 (-0.26) ⁺	6.12 (0.49) ⁺	5.64 (0.31) ⁺	2.82 (0.09) ⁺
INC4	-26.74 (-1.41) ⁺	-45.82 (-1.99)**	-77.54 (-2.62)**	-131.64 (-1.92)*
INC5	19.42 (1.00) ⁺	19.68 (0.96) ⁺	-8.62 (-0.36) ⁺	-40.76 (-0.71) ⁺
INC6	-10.16 (-0.85) ⁺	-7.32 (-0.48) ⁺	-4.78 (-0.24) ⁺	-27.40 (-0.91) ⁺
DAY_EURO	-0.14 (-1.25) ⁺	-0.16 (-1.04) ⁺	-0.34 (-1.56) ⁺	-0.30 (-0.72) ⁺
F	5.31	7.48	7.42	3.80
Pseudo R ²	0.125	0.132	0.116	0.088
No. of cases	203	203	204	205

Displayed are the unstandardized coefficients, *t* values in parentheses

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$; ⁺ = not significant

significantly in the models for the QF, SF, and final. Thus, people who will watch games of the European Championships state a significantly higher WTP. Similar to Humphreys et al. (2011) age has a significantly positive impact in all models for the European Championships. In contrast age squared influences WTP negatively. These findings indicate that the impact of age on WTP follows an inverted U-shape with peaks between 38 and 40 years. Education has a significantly negative influence on WTP in three models (WTP_FOOT_QF, WTP_FOOT_SF, and WTP_FOOT_F), indicating that a lower educational level increases WTP. People with a personal monthly net income from €3,001 to €4,000 (INC4) are willing to pay less for reaching the SF and final at the European Championships as well as for the title than people in the lowest income group (INC1).

The determinants of WTP for sporting success at the 2012 London Olympic Games are presented in Table 6. The variable INT_SPORT has a significant impact on WTP in all three models; yet, the effect is negative. It is likely that respondents place value on Olympic medal success even when they are not interested in sports in general. Similar to previous research (Wicker et al. 2012a), interest in the Summer Olympics has a significantly positive impact on WTP. People who plan to watch the Summer Olympics were willing to pay significantly more for sporting success of the German Olympic team. The regression results also show that performance expectations significantly influence WTP: people with low expectations are willing to pay more than people with high expectations. Similar to previous research (Wicker et al. 2012b), identification with the German Olympic team has a significantly positive impact on stated WTP in all models.

Table 6 Summary of regression results for the 2012 London Olympic Games (Tobit models; weighted sample; robust standard errors)

	WTP_OL_3	WTP_OL_2	WTP_OL_1
Constant	-76.64 (-1.07) ⁺	-127.48 (-1.20) ⁺	-171.59 (-1.24) ⁺
INT_SPORT	-15.79 (-2.08)**	-22.01 (-1.94)*	-38.32 (-2.57)**
SPORTP	15.99 (1.35) ⁺	22.67 (1.31) ⁺	31.33 (1.30) ⁺
INT_OL	18.83 (2.45)**	31.04 (2.74)***	45.08 (2.89)***
WATCH_OL	44.65 (2.80)***	69.55 (2.92)***	96.08 (3.06)***
EXP_OL	4.76 (2.11)**	7.56 (2.23)**	9.61 (2.00)**
ID_GER	0.89 (0.13) ⁺	0.36 (0.04) ⁺	3.79 (0.26) ⁺
ID_OL	26.91 (3.57)***	43.62 (3.56)***	68.52 (4.02)***
NATIMP_OL	3.17 (0.55) ⁺	-4.32 (-0.47) ⁺	-20.99 (-1.59) ⁺
PERSIMP_OL	5.42 (0.82) ⁺	7.24 (0.62) ⁺	15.49 (0.99) ⁺
AGE	0.44 (0.15) ⁺	-0.78 (-0.18) ⁺	-3.10 (-0.57) ⁺
AGE2	-0.01 (-0.32) ⁺	0.01 (0.18) ⁺	0.04 (0.58) ⁺
GENDER	-31.01 (-2.95)***	-52.96 (-3.28)***	-75.50 (-3.45)***
EDU	-8.63 (-2.27)**	-13.11 (-2.62)***	-15.48 (-2.44)**
INC1	REF	REF	REF
INC2	1.96 (0.15) ⁺	-0.28 (-0.01) ⁺	2.07 (0.08) ⁺
INC3	22.54 (1.31) ⁺	28.32 (1.12) ⁺	41.68 (1.31) ⁺
INC4	31.53 (1.08) ⁺	43.18 (1.07) ⁺	61.53 (1.23) ⁺
INC5	-4.65 (-0.19) ⁺	-17.93 (-0.52) ⁺	-21.99 (-0.47) ⁺
INC6	16.22 (0.90) ⁺	16.61 (0.62) ⁺	26.29 (0.75) ⁺
DAY_OL	-0.00 (-0.01) ⁺	0.48 (1.02) ⁺	1.08 (1.70)*
F	9.56	7.35	7.29
Pseudo R ²	0.176	0.184	0.171
No. of cases	213	213	213

Displayed are the unstandardized coefficients, *t* values in parentheses

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$; + = not significant

With regard to socio-demographic variables, males report a significantly lower WTP than females. This gender effect in favor of females is supported by a previous study: Wicker et al. (2012b, p. 208) stated that “women might be more emotional and thus assess a higher value to the public goods created through sporting success”. Education is negatively associated with WTP. This finding is contrary to previous research (Wicker et al. 2012b).

When comparing the significant factors for both events, it is evident that the expectation of the outcome and the intention to watch the event have a significant impact on the WTP for sporting success at the European Championships and the Summer Olympics. The finding that low expectations lead to higher WTP is contrary to previous research (Humphreys et al. 2011) but people may not want to pay money for something they expect to happen anyway. Moreover, people may assume that investing in elite athletes would not help overcome the performance difference to other nations. On the contrary, the effects of the interest in football and in the Summer Olympics differ. While interest in the Summer Olympics has a significant positive impact on WTP, interest in football is not significant in the football models. Football events like the European Championships are much more celebrated in Germany. People with little interest in football could be interested in other aspects like the social events or the celebrations. To ensure that social gatherings take place over a longer period (i.e., this is the case when the German team is successful) they state a higher WTP despite of little interest.

5 Conclusions

This study examined the value of sporting success to the German population using the CVM. It compared the outcomes between the 2012 European Championships and the 2012 Olympic Games. The results show that a higher share of people report a positive WTP for sporting success in football compared with the Olympics, while the absolute WTP values are higher for the Olympic Games. The findings indicate that sporting success of German athletes is important for a large part of the German population. The extrapolated WTP values lead to an aggregated WTP of €2.8 billion for winning the European Championships in football and €3.25 billion for the first place in the medal table at the London Olympics. Thus, this comparative study reports a higher WTP for sporting success at the Olympics compared with football, while previous studies focusing on one event suggested a higher value of football success. This finding supports the need for more comparative studies in CVM research. The aggregated WTP values are quite substantial and may justify government subsidies for elite sport, especially for Olympic sports. Commercial firms, particularly those selling consumer goods in Germany, should also consider sponsoring mainly those sports where Germans athletes are successful because of the value people place on sporting success.

In the football models, expectation of a good German result, identification with the football team, personal importance that the football team does well, and age significantly influence WTP with expectation and identification having a negative influence. In the Olympic models, general interest in sport and in the Summer

Olympics, watching the Summer Olympics, expectation of a good German result, identification with the German team, being female, and age have a significant impact on the WTP for sporting success. The effect of general interest in sport is negative. The same applies to age squared leading to an inverted-U relationship for age with a peak at about 40 years. To summarize, this study shows that major sporting events like the 2012 European Championships and the 2012 London Olympics differ in their value to the German population as well as in the determinants of WTP for sporting success.

This study has some limitations that represent avenues for future research. The relatively small convenience sample represents an empirical limitation. Future research may consider drawing random samples and increasing the size of the sample. Furthermore, the pseudo R^2 s of the models are only between 8.8 and 18.4 %, indicating that some relevant factors may still be missing. Moreover, given that this study was limited to Germany, it would be interesting to examine the WTP for sporting success in other countries and in the context of other major sporting events. Furthermore, it would be interesting to expand the range of sports under investigation since this research and other studies focused on football and Olympic sports. Extending this comparative research to other types of sport looks promising and should be of interest to policy makers who have to allocate public subsidies to different sports. The results of this study support the need of comparative studies within CVM research.

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