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Article

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The relationship between visitor satisfaction, expectation and spending in a sport event

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ABSTRACT

There are many studies on the determinants of visitor spending at sport events. However, few studies investigate the effect of satisfaction on spending and even fewer relate this to visitor expectations. The present study examines the case of the World Ski Championships 2015 which were held in Falun, Sweden. A particular focus of the study is if and how visitor satisfaction influences visitors' expenditures. It is hypothesized and argued that spending depends on satisfaction relative to prior expectations. It is empirically found that those visitors with satisfaction greater than their expectations prior to the visit spend significantly more. A limitation of this study, however, is that the satisfaction is not measured systematically taking into consideration several dimensions of satisfaction which should be addressed in the future research.

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1. Introduction

The issue of the determinants of tourist expenditures has been researched on widely. One reason is of course that tourists and event visitors generate income and the knowledge about these determinants is of value for destination and event management. Wang and Davidson (2010a) and Brida and Scuderi (2013) provide extensive reviews of micro level studies that have used econometric methods to estimate the determinants of visitor spending. Thrane (2014) discusses further econometric issues such as choice of independent variables, functional form and estimation technique.

Although there are many studies that have examined the expenditure patterns of tourists in general, there seem to exist fewer studies on the expenditure patterns for sport events. Hosting sport events is often seen as having a positive impact on the local, and in some degree the regional, economy and usually attracts intense competition (Dixon, Backman, Backman, & Norman, 2012). These positive impacts are for example visitor spending, the promotion of the host city, stimulating businesses and possibly also improving quality of life (Preuss, 2005; Saayman, Saayman, & du Plessis,

2005). Visitor spending directly related to the event itself, and for the years to come if the positive promotive effect exists, is one of the most important impacts. Hence, knowledge of the determinants of visitor spending in sporting events is important for planning, marketing and policy making. From the point of view of the hosting city it is crucial to attract visitors that spend most. As noted by Mok and Iverson (2000), knowledge of the spending behaviour of the visitors makes the marketing efforts most efficient.

Although the literature on the determinants of visitor spending is vast there seem to be very few studies that have examined the effect of psychographic factors on expenditures. Lehto, O'Leary, and Morrison (2004); Wang, Rompf, Severt, and Peerapatdit (2006) and Sato, Jordan, Kaplanidou, and Funk (2014) emphasize that these variables are important for destination choice and spending. Wang and Davidson (2010a) and Brida and Scuderi (2013) in their comprehensive reviews, however, conclude that the use of psychographic variables in the literature is rare and one of the areas for future research. For example, it can be argued that satisfaction with the visit correlates with spending. Furthermore, visitor satisfaction in turn is related to visitor expectations. Consumer satisfaction has been defined based on the degree of fulfilment of expectations on a good or service (Francken, van Raaij, & Verhallen, 1981; Oliver, 1980). Expectations may also be closely related to trip motivation, interest and commitment. The results of regressions that do not control for such factors run the risk of omitted variable bias.

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Recently a few welcome and valuable contributions, have examined the effect of satisfaction on visitor expenditures; Kim, Prideaux, and Chon (2010); Chen and Chang (2012); Disegna and Osti (2016) and Jurdana and Frleta (2017). However, none of the mentioned studies takes into account potential relationship between satisfaction and expectation which as mentioned previously is important in the general case of consumer satisfaction. Another issue that is not addressed is the possibility of a reversal effect from spending on satisfaction.

The main purpose of the present study is to empirically examine the role of satisfaction on visitor spending in a sport event, the World Ski Championships, 2015, which was held in Falun, Sweden, between February 18 and March 1. In doing so, it is recognized that satisfaction and expectations interact. Data were collected through an in-person survey of the visitors to this event. A random sample of visitors was approached and asked to give information on their socioeconomic characteristics, expenditures and experiences. Among others, questions were asked about their expectations prior to the visit and their satisfaction with different aspects such as the quality of service provided by the staff and volunteers, facilities and accommodation. Information from 742 usable responses are the basis for the econometric analyses.

This paper contributes to the existing literature in several ways. It adds a case study on visitor expenditure determinants in a sport event context. To the best knowledge of the author there does not seem to exist studies that relate explicitly visitor satisfaction to visitor expectation when examining the effect of satisfaction on visitor spending at a destination. Also, unlike the other few studies on the relationship between visitor satisfaction, the possibility of endogeneity of satisfaction as a predictor for expenditures is taken into consideration. The endogeneity of visitor satisfaction is due to the possibility of a simultaneous relationship between satisfaction and expenditures, i.e. not only satisfaction can influence expenditures but there is also a reversal effect from spending on satisfaction. To the best knowledge of the author, the present study is the only study that examines the endogeneity of satisfaction as a predictor for expenditures in a sport event context. The results may also be relevant for sport event organizers for identifying a deeper understanding of the relationship between expectations, satisfaction and spending.

A limitation of this study is the way satisfaction has been measured. In the survey used, the respondents were asked to rate their overall level of satisfaction. A better way to measure satisfaction is taking into account several dimensions that underly and construct the overall satisfaction. However, the aim of the paper is not to report careful and precise coefficient estimates measuring the specific effect of visitor satisfaction. The main purpose is to provide empirical evidence that satisfaction is an important factor. As in this study, Chen and Chang (2012) use one question about satisfaction (ranging 1–5 from strongly negative to strongly positive evaluation). Kim et al. (2010) also use one question to measure satisfaction (1 = unsatisfied; 2 = neutral; 3 = satisfied). Disegna and Osti (2016) had access to data on, not only, overall satisfaction but also satisfaction with different aspects of the trip like landscape, arts and price (all measured on 10 point Likert scale). Jurdana and Frleta (2017), however, using principal component analysis, construct a satisfaction score based on 22 underlying elements.

The rest of the paper is organized as follows. Next section provides a review of previous research with the focus on the determinants of visitor expenditures. The survey and data collection are shortly described subsequently followed by the empirical analysis and results. Concluding remarks are presented in the last section.

2. Previous research

The literature on visitor expenditure is vast and growing (Thrane, 2015). Wang and Davidson (2010a); Marcussen (2011) and Brida and Scuderi (2013) provide comprehensive reviews. The determinants of the visitor expenditures are classified into the following four categories (Brida & Scuderi, 2013; Thrane, 2015): (1) Economic constraints, for example income (2) Socio-demographic variables, for example age (3) Trip-related variables, for example length of the visit (4) psychographic variables, for example trip motivations.

Income, being related to the budget constraints that individuals face, is theoretically a relevant variable in determining spending. This is also confirmed empirically. Brida and Scuderi (2013), in their review paper on visitor spending studies, mention income as a frequent explanatory variable. Davies and Morgan (1992), using the United Kingdom Family Expenditure Survey data, find that holiday expenditures are income elastic. In a study on the spending behaviour of Japanese tourists to US, Jang, Bai, Hong, and O'Leary (2004) find that the level of expenditures is significantly higher for high-income travellers compared to the low-income travellers. Marrocu, Paci, and Zara (2015) analyse data on non-resident holiday tourists to Sardinia during April and October 2012 and find that travel expenditures are affected significantly by income. In a study of Norwegian households' summer vacation trips, Thrane (2016) finds a significantly higher spending by high-income households than low-income households. Dolnicar et al. (2008) argue that tourism expenditures should be studied in the context of other household expenditure decisions and that there is a great degree of heterogeneity among households. Dixon et al. (2012) investigate expenditure patterns of sport tourists attending a golf tournament in the USA and find a significant heterogeneity with regarding spending patterns, trip characteristics and preferences.

In a sports-related study of spending behaviour of visitors to 1995 and 1999 Alamo Bowl college football games, Cannon and Ford (2002) find that high income increased spending per day significantly. In another sports-related study, Kruger, Sayyaman, and Ellis (2012) find that spectators to the Two Oceans Marathon with a higher income occupation also spend more at the race. Sato et al. (2014) also find a positive significant effect of income on expenditures examining five-year data on a running event in US. Salgado-Barandela, Sánchez-Fernández, and Barajas (2018) analyses the determinants of spending at Obradoiro professional basketball matches and find that among others the origin of the attendees, ticket price and the time of the game influence individual spending.

As for the socio-demographic variables that may influence spending, many studies use age of the visitor. Brida and Scuderi (2013) mention that age-related variables are, in absolute terms, the most frequently used regressors. The direction of the effect of age on spending is however ambiguous (Thrane, 2016). Mok and Iverson (2000) find that younger Taiwanese tourists to Guam spend significantly more. Jang et al. (2004) find that age significantly influences visitor expenditures. Thrane (2015) finds a modest age effect on Norwegian students' summer vacation expenditures. Marrocu et al. (2015) do not find a significant effect of age on holiday expenditures. Sato et al. (2014) and Thrane (2016) find a nonlinear significant effect of age on tourist expenditures. Alegre, Cladera, and Sard (2011), however, find no statistically significant effect of age on expenditures. Within the sports-related studies Saayman et al. (2005) find that high spenders are above 35 years of age.

Another individual-specific variable that many studies use is educational level. Brida and Scuderi (2013) refer to 160 regressions that have used variables related to education. In the majority of these the measure of educational level employed has no significant

effect on expenditures. Craggs and Schofield (2009); Alegre et al. (2011); Sato et al. (2014) and Marrocu et al. (2015) for instance find no significant effect of education on expenditures. An exception is Kruger et al. (2012) who find a significant effect of education on spending.

Many studies also use the gender of the visitor as a determinant of expenditures. Brida and Scuderi (2013), in their review paper, mention that gender was used as regressor in 130 regressions. Wang et al. (2006), using visitor data from the respondents who travelled to Northern Indiana, do not find any gender effect on expenditures. Craggs and Schofield (2009) in their analysis of day-visitor expenditure at The Quays in Salford, UK, find that females are more likely to spend more. Neither Alegre et al. (2011) nor Marrocu et al. (2015), however, find any significant effect of gender on expenditures. Thrane (2016) finds that males significantly spend more on their summer vacations than females. In a sports-related study, Sato et al. (2014), studying tourists' expenditures at a mass participant running event in US, find that male participants spent more money than females. Generally, there is no clear expectation of the effect of gender on expenditures.

Other examples of socioeconomic variables that are used in regressions as explanatory variable is a measure of the number of household members or household composition participating in the trip, marital status, race or ethnicity, occupation and nationality (Brida & Scuderi, 2013; Wang & Davidson, 2010a). Often international visitors are found to spend more than domestic visitors. For example Saayman et al. (2005) and Marrocu et al. (2015) find a significant higher level of spending by international visitors than domestic. Thrane (2016) finds that Norwegian households spend almost three times as much on their international summer trips than domestic. This is partly explained by the type of accommodation and mode of transportation. In general there might be a significant difference between the spending behaviour of foreign visitors to an event compared to locals.

Examples of trip related variables that may influence visitor spending are the type of accommodation, the type of activities undertaken during the trip, the destination of the trip, means of transportation, party size and decomposition, time of the trip reservation, previous travel experience, purpose, time and duration of the trip (Abbruzzo, Brida, & Scuderi, 2014; Brida & Scuderi, 2013; Wang & Davidson, 2010a).

Some previous studies indicate a significant effect of party size or number of household members on visitor spending. In a study of overnight visitors to Virginia Beach, USA, Agarwal and Yochum (1999) find that expenditures are positively correlated with party size and number of children. In a study of visitor expenditure in Herefordshire, England, Downward and Lumsdon (2003) find group size to be a significant influence on expenditures. Alegre et al. (2011) find that whether children are in the party significantly affects spending. Tang and Turco (2001); Sato et al. (2014); Marrocu et al. (2015) also find that party size significantly influences expenditures. Mok and Iverson (2000), studying Taiwanese visitors to Guam, find that smaller party size is associated with more spending. Jang et al. (2004), however, find that the number of adults in the travel party is not an important factor in explaining the variation in expenditures. Downward and Lumsdon (2000) studying visitors to Cheddar, England, find that the group composition rather than group size affects visitor expenditure.

Another frequently used trip related variable in studies of the determinants of visitor spending is length of stay. According to Brida and Scuderi (2013) most empirical studies find a positive and significant effect of length of stay on expenditures. Agarwal and Yochum (1999) find expenditures to be positively associated with length of stay. Downward and Lumsdon's (2000) study of the determinants of visitor expenditure at Cheddar, England, also conclude that length of stay has a significant influence on expenditures. Stud-

ies by Mok and Iverson (2000) and Tang and Turco (2001) too find length of stay as a significant influential factor on spending. Jang et al. (2004) conclude that the number of nights staying at a destination positively influences total expenditures and Sato et al. (2014) find that trip duration positively correlates with expenditures per day. Same conclusion is drawn by Alegre et al. (2011); Marrocu et al. (2015). Thrane (2015) and Thrane (2016) also conclude that the length of stay has a positive effect on total trip expenditures. However, Taylor, Fletcher, and Clabaugh (1993) and Mehmetoglu (2007) find a negative effect of length of stay on daily tourist expenditures.

In their review paper Brida and Scuderi (2013) report that 40 regression models that use distance travelled as an explanatory variable. 25 of these studies find a positive significant effect while 15 find no significant effect. Cannon and Ford (2002) and Marcusson (2011) report a positive significant effect of travel distance on tourist spending. Marrocu et al. (2015) also find a positive effect of travel distance on total expenditures for the entire holiday which they suspect is due to travel costs and length of stay.

Previous travel experience can arguably influence expenditures. According to Wang et al. (2006) and Wang and Davidson (2010b), however, travellers' expenditures generally are not affected by whether it is a first or a repeat visit. Jang et al. (2004); Lehto et al. (2004) and Pouta, Neuvonen, and Sievänen (2006) on the other hand find that repeat visitors typically spend less than first-time visitors. Kruger et al. (2012) argue that repeaters tend to spend more. Marrocu et al. (2015) find that repeat visitors to Sardinia have higher expenditure levels compared to first-time visitors. Thus, the effect of repeat visit on expenditures is not empirically decisively established.

Brida and Scuderi (2013), p. 37) define psychographic variables as "characteristics of consumers that may have a bearing on their responses to products, packaging and advertising, and include self-concepts, lifestyle, attitudes, interests and opinions, as well as perceptions of product attributes." However, both Wang and Davidson (2010a) and Brida and Scuderi (2013) in their extensive reviews conclude that psychographic variables are rarely used in the studies of determinants of visitor expenditures and is one of the areas for future research.

An example of a psychographic variable is when visitors are asked to rate their level of satisfaction, either overall or on specific aspects of the visit, on a Likert scale. Recently a few contributions have examined the effect of perceived satisfaction on visitor expenditure; Kim et al. (2010) find a positive correlation between visitor satisfaction and spending based on data from Korean Traditional Drink and Rice Cake Festival that was held the historical city of Gyeongju, Korea. Chen and Chang (2012), based on Taiwan's tourism data, find a positive correlation between satisfaction and level of expenditure. Disegna and Osti (2016) conclude that satisfaction with different aspects of the visit influences spending. Jurdana and Frleta (2017) report that satisfaction with the diversity of facilities is a significant predictor for visitor spending at the destination. However, none of the mentioned studies considers possible endogeneity involved when visitor satisfaction is used as an explanatory variable for visitor expenditures. It is well known that failing to account for this endogeneity may lead to biased and inconsistent coefficient estimates (see for example Verbeek (2012)).

The literature review identifies some gaps in the rich literature on the determinants of visitor spending that the present study attempts to fill. Few studies have examined the role of visitor satisfaction on spending, particularly for sport events. In this respect, there does not seem to be studies that relate explicitly visitor satisfaction to visitor expectation when examining the effect of satisfaction on spending. Moreover, unlike the few previous studies that examine the effect of satisfaction on spending the issue of

endogeneity of visitor satisfaction is taken to account in the present study.

3. Data

Data for this study come from an onsite survey during the World Ski Championships 2015 in Falun, Sweden, and are discussed more detailed in [Mortazavi and Heldt \(2016\)](#). Several organisations were interested in conducting the survey and joined in doing so. These were: a destination management organization, Visit Southern Dalarna, the World Ski Championship network Beyond Skiing and Dalarna University. The main purpose of the survey was to collect information so that the economic impacts of the event could be assessed. A questionnaire was designed containing questions about the visitors' socioeconomic characteristics, expenditures and their experiences. More specifically, the questionnaire asked the respondents about the gender, age, level of education, how many days the respondent had visited the games, whether the respondent had attended a ski world cup championship previously and if so how many, the number and age of the party, how the ticket was purchased, transportation mode to the games, lodging form, income, whether they travelled from other countries to Falun, Sweden, and the place of residence. The respondents were also asked to state their level of expectation prior to their visit and how satisfied they were in general and more specifically regarding how they perceived the quality of, for example, facilities and the behaviour of the staff and volunteers.

The method for data collection was an on-site self-complete questionnaire study. The questionnaires were distributed to respondents using a stratified random sampling strategy. Locations for sampling of visitors were based on previous knowledge from the 2014 "pre-World Ski Championship" event as well as on the map for the event arena. Five different locations within the event arena were chosen for data collection. Questionnaires were handed out to approximately every fifth visitor during a pre-specified time interval within a given location. Time intervals during the day as well as locations were randomly selected according to a pre-specified scheme. In total about 350,000 attended the competitions that lasted 11 days.

After adjusting for blank, incomplete, a few fake answers and excluding respondents under 18 years old, a total of 742 usable responses were collected. [Table 1](#) shows summary statistics of the data. Visitor expenditure, is defined as the total spending per day, in Euro (1 € ≈ 9.4 SEK in February 2015), by the individual visitor on lodging, restaurant expenditures, food (snacks, drinks, etc.), shopping (clothes, souvenirs, ski equipment, etc.), local travels (buss tickets, taxi fares etc.).¹

The average daily expenditure is 136 € with a standard deviation of 156 indicating a large degree of variation. 54% of the sample are non-locals. These have been identified according to the distance travelled. Those who have travelled more than 100 km (one way) to get to the games in Falun are defined as non-locals. 50% of the sample are males. The average age is 44 with a standard deviation of 15. 10% of the sample have up to elementary school education, 25% up to high school, 32% have a college degree and 33% have a university degree. The games lasted for 11 days. The average number of days attended is about 3. There were special activities held in 6 of these days. 93% of the sample visited the games at least one such day.

¹ An aim of this study is to examine the relationship between satisfaction and expenditures. Satisfaction may depend on the price and quality of the services provided by the local businesses.

Table 1
Sample characteristics (n = 742).

	Mean	S.D.
Daily expenditures (€)	136	156
Non-local visitor (1 = Yes, 0 = Otherwise)	0.54	0.50
International visitor (1 = Yes, 0 = Otherwise)	0.26	0.44
Number of days visited the games	2.91	2.23
Stayed at hostel (1 = Yes, 0 = Otherwise)	0.05	0.22
Stayed at rented house or apartment (1 = Yes, 0 = Otherwise)	0.11	0.31
Stayed at hotel (1 = Yes, 0 = Otherwise)	0.09	0.29
Income level up to 21210 € before tax annually (1 = Yes, 0 = Otherwise)	0.24	0.43
Income level between 21210 € and 53022 € (1 = Yes, 0 = Otherwise)	0.54	0.50
Income level above 53022 € (1 = Yes, 0 = Otherwise)	0.22	0.41
Elementary school is the highest education level (1 = Yes, 0 = Otherwise)	0.10	0.29
High school is the highest education level (1 = Yes, 0 = Otherwise)	0.25	0.44
College is the highest education level (1 = Yes, 0 = Otherwise)	0.32	0.47
University is the highest education level (1 = Yes, 0 = Otherwise)	0.33	0.47
Gender (1 = Male, 0 = Female)	0.50	0.50
Party size	2.74	1.51
Whether previously has visited a Ski World Championship (1 = Yes, 0 = Otherwise)	0.37	0.48
Age	44.05	14.57
Attended the games on a day with special activities (1 = Yes, 0 = Otherwise)	0.92	0.26
Rating of overall satisfaction (On a scale going from 1 to 5, 1 being very bad and 5 very good.)	4.17	0.86
Rating of expectation on the games before arrival. (On a scale going from 1 to 5, 1 being low and 5 very high.)	4.00	0.81

4. Model specification and estimation results

As mentioned before previous empirical research divide explanatory variables for visitor expenditure into four categories; (1) Economic constraints (2) Socio-demographic variables (3) Trip-related variables (4) psychographic variables (See for example [Brida and Scuderi \(2013\)](#)). The first category of variables such as income and time relate to different constraints that individuals face when deciding how much to spend while visiting an event. Examples of socio-demographic variables are age and gender. Accommodation type and party size are examples of trip-related variables. Examples of psychographic variables are opinion about the trip and motivation. This type of variables has rarely been used in empirical studies. One reason is that official statistics seldom survey psychological characteristics of the visitors ([Wang and Davidson \(2010a\)](#) and [Brida and Scuderi \(2013\)](#)). The importance of including such variables is also highlighted by [Lehto, O'Leary, and Morrison \(2002\)](#) and [Wang et al. \(2006\)](#). Data used in the present study, however, contain information about the stated level of satisfaction of the visitors and also their expectations prior to the visit.² Hence, besides the usual explanatory variables, the influence of visitor satisfaction on visitor spending can be examined controlling for prior expectations.

The basic assumption behind the estimated model is that expenditures depends on a set of individual and trip-related char-

² As mentioned in the introduction a better way to measure satisfaction is taking into account several dimensions that underly and construct the overall satisfaction.

acteristics. Furthermore, it is recognized that visitor satisfaction relative to expectations the visitor had prior to the visit is a relevant factor determining expenditures. However, the visitor satisfaction in turn may depend on the visitor expenditures, i.e. visitor satisfaction may be endogenous. In fact, a Hausman test confirms this assertion for these data. It is well known that the coefficient estimates are biased and inconsistent when explanatory variables are endogenous (see for example Verbeek, 2012). The problem is that the unobserved factors which constitute the error term in the equation is correlated with the explanatory variable whose effect is to be estimated, here satisfaction. Another way the problem arises is when there is reverse causality. Theoretically, it is highly plausible that satisfaction affects spending but also that more spending may lead to more satisfaction. Empirically, Mortazavi (2018) finds that there is a reverse causality between satisfaction and spending. To the author’s best knowledge, this is the only paper that brings up this issue in a tourism context. However, Mortazavi (2018) uses the so called instrumental variable regression technique which is a more suitable approach if there is a valid and relevant instrumental variable. Such a variable should be highly correlated with the endogenous independent variable but not directly affecting the dependent variable (Verbeek, 2012).

In the present study there is no such instrumental variable so another approach is chosen. Two Eq.s (1) and (2) are simultaneously estimated by maximum likelihood within the structural equation modelling framework in which the error terms are allowed to be correlated.³

$$\ln y_i = \alpha + x'_i \beta + \delta s_i + \varepsilon_i \tag{1}$$

$$s_i = \mu + z'_i \phi + \gamma e_i + \lambda \ln y_i + \nu_i \tag{2}$$

Index *i* denotes individual $i = 1, \dots, n$. *y* is the visitor expenditure, *x* and *z* are vectors of independent variables such as visitor income, visit duration etc. β and ϕ are vectors of parameters attached to the mentioned variables. *e* is visitor expectation, *s* is visitor satisfaction relative to visitor expectation and ε and ν are error terms.

Eq. 1 relates (natural log of) visitor expenditure to a set of independent variables. Among others the ratio of stated satisfaction level to expectation⁴ The theoretical underpinning of Eq. 2 is the expectation confirmation theory (Oliver, 1980). According to this theory, satisfaction with a product or service is related to the expectation of the consumer prior to the consumption. If the perceived performance exceeds expectation the consumer experiences satisfaction and vice versa. Using structural equation modelling technique, the unobserved factors, ν , influencing visitor satisfaction, are allowed to be correlated with the unobserved factors, ε , influencing visitor expenditure. The estimation results for Eq. 1 are presented in Table 2. The estimation results for Eq. 2 are presented in Table A1 in the appendix since the main interest is to discuss the influence of satisfaction on expenditures. However, we note that there is a positive correlation between satisfaction and expenditures even in this equation. Furthermore, there is a significant correlation between the error terms of the two equations.

The regression results in Table 2 indicate that the degree of satisfaction, when controlling for among others visitor expectation, has a positive significant effect on expenditures. More specifically the results suggest about 70% ((exp(0.528)-1) × 100) more expenditures for those whose satisfaction level exceed their expectations which were about 25% of the sample.

³ The software Stata version 15 has been used for estimation.

⁴ When equation 1 is estimated separately, the coefficient of the variable satisfaction/expectation is still positive (0.122) but much less than the one reported in Table 2 (0.528) that is based on the simultaneous estimation of equations 1 and 2. This is another indication of the fact that the estimate of the effect of satisfaction/expectation on spending may be biased if the endogeneity issue is not considered.

Table 2

Estimation results for Eq. 1. The dependent variable is the logarithm of daily expenditures.

	Coefficient	Robust S.E.
Ratio of satisfaction to expectation	0.528***	0.201
Non-local visitor (1 = Yes, 0 = Otherwise)	0.194***	0.068
International visitor (1 = Yes, 0 = Otherwise)	0.332***	0.087
Log of number of days visited the games	0.326***	0.053
<i>Reference category for lodging is home or staying with family and friends:</i>		
Stayed at hostel (1 = Yes, 0 = Otherwise)	0.140	0.123
Stayed at rented house or apartment (1=Yes, 0 = Otherwise)	0.288**	0.117
Stayed at hotel (1 = Yes, 0 = Otherwise)	0.405***	0.102
<i>Reference category for income is income up to 21210 € before tax annually:</i>		
Income level between 21210 € and 53022 € (1 = Yes, 0 = Otherwise)	-0.009	0.071
Income level above 53022 € (1 = Yes, 0 = Otherwise)	0.219**	0.089
Gender (1 = Male, 0 = Female)	0.020	0.062
Log of party size	-0.024	0.056
Age	0.059***	0.016
Age squared	-0.001***	0.000
Attended the games on a day with special activities (1 = Yes, 0 = Otherwise)	0.147	0.131
Constant	4.256***	0.421
Chi2(15) = 362.55, Prob > Chi2 = 0.000, Generalized R-squared = 0.29		

Notes: Robust standard errors are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

According to the results, ceteris paribus, non-local visitors spend on average about 21% ((exp(0.194)-1) × 100) more than local visitors. Also, as expected, international visitors spend considerably more than domestic visitors, more specifically about 40% ((exp(0.332)-1) × 100) more. A variable that is often used as a determinant of expenditures is the duration of stay. If the dependent variable is total trip expenditures, it is natural to expect a positive effect of length of stay which is also found in other studies (see for example Thrane (2016)). In the present study, the variable is the number of the days that the individuals have visited the games, thus it is not exactly length of stay. Furthermore, the dependent variable is not total expenditures but total expenditures per day. Nevertheless, as is shown in Table 2, there is a positive significant effect of number of days visiting the games although diminishing with the number of days. The elasticity of expenditures with respect to this variable is 0.33. This means that as the number of days visiting the games increases by 10% expenditures per day increases by 3.3%, which is not an elastic response.

Type of accommodation is also an important factor for expenditures. As expected, it can be seen, that those who stayed at commercial accommodation spend more per day. The reference group here is those who either are at their own homes (local visitors) or visitors who stay at family or friends. The effect of hostel accommodation is positive but not significant. Those who rent a house or apartment spend (exp(0.288)-1) × 100 = 33% more while those who stay at hotel spend even more, (exp(0.405)-1) × 100 = 50%, compared to those who live at home or at family and friends.

The variable income is measured as a categorical variable with three levels. The first and the reference level is the low-income level up to €21210 before tax annually, the second category is income levels between €21210 and €53022, and the third category is for income levels above €53022. According to the results only income levels of above €53022 significantly affects expenditures. More specifically an individual belonging to this income category spends on average (exp(0.219)-1) × 100 = 24% more compared to an individual with lower income.

Although not reported in Table 2, education level has no significant influence on expenditures for these data. Gender and party

size have no significant influence on expenditures either. Age, however, influences expenditures significantly and nonlinearly. [Thrane \(2016\)](#) finds the same inverted U-shaped relationship between expenditures and age for Norwegian summer travellers.

For the case of Falun ski world championship the organizers provided special activities at certain days of the games. These days can be identified in the data. To check whether these special activities have a significant influence on expenditures a dummy variable is used taking the value one if there was such an activity and zero otherwise. The results show no significant difference in expenditures between days with special activities and normal days.

The generalized R-squared is 0.29 which indicates a relatively good fit considering the cross-sectional nature of the data. However, there are obviously important influencing factors that this model has not accounted for. The model does not suffer from multicollinearity according to the variance inflation factor (VIF) criteria. All the VIFs for the independent variables are less than 2 (except for age and age squared for which the p -values are not affected). Furthermore, the functional form specification seems to be satisfactory according to the Ramsey specification test. Note also that robust standard errors are reported in the table.

5. Discussion

One specific focus of the present study was to examine the effect of visitor satisfaction on visitor expenditure in a sport event. It is found that as satisfaction exceeds expectation, expenditures increase significantly. Particularly the results suggest about on average 70% more expenditures for those whose satisfaction level exceed their expectations, almost 25% of the sample. A positive effect of visitor satisfaction on spending has also been found by [Chen and Chang \(2012\)](#) and [Disegna and Osti \(2016\)](#). [Kim et al. \(2010\)](#), however, find a negative effect of satisfaction on total expenditures. These studies, however, do not examine the possible endogeneity of visitor satisfaction. Furthermore, they do not seem to consider that what may be most relevant is the satisfaction level relative to the visitor expectations. The result from the present study confirms the theoretical conjecture and practical experience that it is important that the expectations of visitors are met. One implication from the present study is that event managers must make sure that they can deliver what they promise when promoting the event and building up expectations.

As regards to the effect of the other independent variables, some results are consistent with previous studies while others are not. This may be indicative of the case specific nature of the results of these types of studies. For example [Barquet, Brida, Osti, and Schubert \(2011\)](#) use a questionnaire survey of day-visitor expenditure at the Biathlon World Cup 2009 in Antholz-Anterselva (in the Trentino-South Tyrol region) and find that income level, the geographical origin of the spectator and the size of the travel group are the most important factors that influence total expenditure. In the present study it also is found that international visitors spend significantly more. The results further suggest that income has a positive and significant effect only for the highest income group and the party size has no significant effect.

[Cannon and Ford \(2002\)](#) study the significance of trip characteristics and demographic factors for spending of visitors to the 1995 and 1999 Alamo Bowl college football games. They find that high income and whether the visitors were from out-of-state increased spending per day. This is also found in the present study. However, they found that longer trip duration levels decreased spending while it is found in the present study that longer duration has a positive significant effect on expenditures.

[Kruger et al. \(2012\)](#) study what socio-demographic and behavioural factors influence visitor spending at the Two Oceans Marathon in South Africa. They find that a high-income occupa-

tion and paid accommodation increase spectator spending. Similar results are also found in the present study.

[Sato et al. \(2014\)](#) examine the determinants of tourists' spending at mass participant sport events. They find that all socio-demographic indicators except education were significant in explaining the variation in tourists' expenditure. No significant effect of education on expenditures are found in the present study either. They also find a significant effect of the behavioural variable, the prior number of running events, correlated positively with tourists' expenditure. Furthermore, they conclude that that tourism expenditure studies should explore more the potential effect of psychographic variables.

6. Concluding remarks

How economically successful an event is, depends heavily on the expenditures of the event visitors. Knowledge of the quantitative effects of factors influencing visitor expenditure is therefore very important for event organizers, even if for many of these factors, theoretical and common sense reasoning inform about the direction of the effects. The present study has been concerned with what factors, and by how much, influence expenditures of visitors to ski world championship held in Falun, Sweden, 2015.

There are many studies on the determinants of visitor spending in general. Relatively fewer studies, however, exist for sport events. Furthermore, there seem to be very few studies that take satisfaction explicitly into consideration as a predictor for visitor spending. Those that do this, however, have not taken the possible endogeneity of satisfaction into account. The present study does this. Moreover, the satisfaction effect is related to the visitor expectations. This is based on the idea that satisfaction is experienced when the actual experience surpasses expectations.

It is found that those whose satisfaction level exceed their expectations spend about on average 70% more, all else equal. There are several important aspects to this result. While some expenditures are necessary, such as food or accommodation, a large amount of spending depends on the level of satisfaction. Since satisfaction is a function of quality of services it is imperative that the event managers and local service suppliers provide high quality service which in turn generate profits. Also, visitor satisfaction is important for the hosting city, and its tourism businesses, to attract revisits. Another relevant aspect is that satisfaction affects expenditures positively even when income is controlled for. All else, in particular income, equal a satisfied visitor spends more. An implication may be that, already in the promoting stage for an event when expectations are formed, it is recognized that visitors' expectations must be met so that the visitors experience satisfaction with their visit and spend more. Creating high expectations but not delivering may not be a good strategy.

Among other findings are that non-local and international visitors spend significantly more and accommodation type, high income levels and age significantly influence expenditures. These findings may also be relevant for event managers and organizers when planning and promoting a sport event.

The limitations of this study are that the results are specific for the particular context and sample. The sampling procedure does not guarantee over- or undersampling of specific groups of visitors. Further research on similar events would make it possible to compare and assess the consistency of the results from the present study. To deal with the endogeneity of visitor satisfaction a structural equation approach has been employed in this paper. Other methods, such as instrumental variable approach, may be better. Another issue for future research is the measurement of visitor satisfaction itself which is not done in a systematic way taking into consideration different dimensions of satisfaction. Also, to get more in depth and qualitative insights it would likely be better to fol-

low up and ask the visitors, after the event, about their satisfaction providing more time for reflection.

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Appendix A

See Table A1.

Table A1

Estimation results for Eq. 2. The dependent variable is ratio of satisfaction to expectation.

	Coefficient	Robust S.E.
Logarithm of daily expenditures	0.083***	0.028
Gender (1 = Male, 0 = Female)	0.049	0.032
Age	-0.010	0.007
Age squared	0.000	0.000
Expectations	0.200***	0.020
Constant	-0.122	0.201
Estimate of variance of ϵ	0.623***	0.051
Estimate of variance of ν	0.167***	0.043
Estimate of covariance of ϵ and ν	-0.128***	0.045
Chi2(5) = 166.62, Prob > Chi2 = 0.000, Generalized R-squared = 0.15		

Notes: Robust standard errors are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

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