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Using the contingent valuation method (CVM), we estimate residents' ex-ante and ex-post willingness-to-pay (WTP) for hosting a large sport event: the 'big start' of the 2016 Giro d'Italia, which was held in the Gelderland region of The Netherlands. The percentage of residents with a positive WTP changed from 29.7% two months before the event to 39.3% immediately after the event, while average WTP increased significantly from €3.58 to €4.45. Residents' ex-ante valuation increased from €5.8 million to €7.1 million. Additionally, following the event in the media and attending the event play an important role in explaining residents' WTP.

Keywords:

Sport Events, Contingent Valuation, Willingness-to-pay, Media, Giro d'Italia

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Introduction

National and regional governments in many countries spend significant amounts of public money on hosting or organizing large scale sport events, claiming they may have large economic impacts and increase sport participation or even public health. However, most research¹ indicates that such benefits are non-existent or relatively small. As a result, more research has been focused on the intangible effects of sport events, in order to explain the continued interest of governments to host and pay for these events (Coates & Szymanski, 2015). These intangible effects of sport events include effects such as happiness, excitement and pride (De Nooij & Van den Berg, 2013). The intangible impacts of a sport event, for the population of a nation or region, can be measured through the Contingent Valuation Method (CMV), by asking individuals about their willingness-to-pay (WTP) for hosting the event (Atkinson, Mourato, Szymanski & Ozdemiroglu, 2008). Most of this event related research has been on residents' WTP before the event. However, ex-ante valuations may under- or overestimate residents' WTP at, or immediately after the event. To gain a better insight in possible shifts in the residents' valuation of an event we examine both the ex-ante and ex-post WTP for a large sport event. Using panel data we are able to distinguish between ex-ante and ex-post valuations within a single research population, as well as between visitors and non-visitors of the event.

The case of interest for our research is the 'big start' of the 2016 Giro d'Italia, which was hosted in the Gelderland region of the Netherlands. The Giro d'Italia is the second largest

¹ See for example Porter and Chin (2012) for an overview.

cycling event in the world, after the Tour de France. It is a three week event for professional elite cyclists that is part of the international UCI World Tour.² First held in 1909, its 20-odd stages attract hundreds of thousands of spectators along the course, and millions followers of the event on the TV and (social) media. The so-called Grande Partenza, or ‘big start’ of the first stage or stages has occasionally been held outside Italy. Interested cities or regions are invited by RCS, the owner of the Giro d’Italia, to bid for hosting this ‘big start’. The privilege to host the 2016 Grande Partenza was acquired by the regional government of the Gelderland province in the Netherlands, along with the three municipalities of Apeldoorn, Arnhem and Nijmegen, all located within the Gelderland province. The 2016 Grande Partenza consisted of a Team Presentation on May 5th (in Apeldoorn) and three race stages from May 6th until May 8th. The three municipalities were all assigned a stage start and a stage finish, while the courses (up to 190 kilometers per day) were situated almost completely within the Gelderland area. Gelderland has approximately 2.0 million inhabitants (CBS Statline). Although no specific permanent sport facilities had to be created, organizational costs for the Local Organizing Committee were considerable, amounting to €12.4 million (De Boer, Schoemaker, Dijk, Bekhuis, Janssen & De Pater, 2016). These costs included side-events such as amateur cycling events and school projects to promote cycling for children. The regional and local governments paid around €9 million, while the national government contributed for €2.5 million. While around 10% of the budget was spend on side events, total public funding amounted to 93% of all costs (De Boer et al., 2016).

The Giro d’Italia ‘big start’ can be classified as a major spectator event (type B in the Gratton & Taylor (2002) classification). The event attracted approximately 482,500 visitors and

² UCI is Union Cycliste International, the world cycling governing body.

gained significant national and international media attention (De Boer et al., 2016). Held in the public space, the event was free-to-access sport, except for a few stands for sponsors and VIPs. Therefore, the ‘big start’ can be viewed as a public good, since it is characterized by non-excludability as well as non-rivalry in consumption (Downward, Dawson & Dejonghe, 2009). Because of the non-excludability, it is hard for the organizers and policymakers to extract the utility enjoyed by attendees of the event. For that reason, revealed preferences – as would be evident by tickets sales - was not measurable, and we had to resort to the more indirect measurement of CVM.

Many studies have valued the intangibles of upcoming large or major sport events. Much less is known about the actual valuation during or after sport events. As such, an ex-ante estimation may either be an over- or an undervaluation. This study investigates if there is a gap in residents’ willingness-to-pay to host an event before and immediately after a large sport event, in this the ‘big start’ of the 2016 Giro d’Italia. Our research question is: does the residents’ ex-post WTP for hosting a large sport event as the ‘big start’ of the Giro d’Italia differ from the ex-ante valuation? Additionally, we will investigate which factors affect these WTPs, and whether different factors are related to WTP at different times. Apart from socio-economic variables we also analyze whether usage of the event, both in attending the event, as well as following the event in the media, contributes to a residents’ WTP. This research will contribute to the understanding of differences between ex-ante and ex-post willingness-to-pay for a sport event as well as factors that are related to the intangible effects. The outcomes will be valuable for public policymakers that may bid for hosting events as well as event organizers.

The plan of this paper is as follows. In the Literature Review we present some relevant literature, while we present the approach of the Contingent Valuation Method that we will use in the

Method section. We present the data and the empirical results of our models in the Data and Results section.” Finally, in the Discussion and Conclusion we present the conclusions, implications and limitations of our research.

Literature Review

There is little evidence that the economic benefits exceed the economic costs of large scale sport events (Coates & Szymanski, 2014; Baade & Matheson, 2004). A literature review by Porter and Chin (2012) shows that, in the 40 articles they investigated, no consistent positive economic impacts from mega sporting events exist. With this knowledge, economists like Coates and Szymanski (2015) have wondered why cities and countries are often eager to bid to host the Olympics or the World Cup. They argue that public funding for major sport events may be justified by intangible effects (see Maennig & Porsche, 2008). Kavetsos and Szymanski (2010) have shown that a significant feel-good factor was associated with hosting major football events. Sporting events can have several potential intangible benefits, such as civic pride, community spirit (e.g. Johnson, Mondello & Whitehead, 2007) and happiness (Kavetsos & Szymanski, 2009). Other intangible effects of sport events are associated with an increasing image of the host country, feelings of national pride and improved development of the elite sport system, although these factors have been scarcely researched (Wicker, Hallmann, Breuer & Feiler, 2012).

Contingent Valuation Method

To measure the value of the nonmarket dimensions in sport events, the Contingent Valuation Method (CVM) can be used. The CVM tool uses surveys in which the respondents is

presented with a hypothetical scenario and then asked to state his or her willingness-to-pay (WTP) for the public good described in the scenario (Walker & Mondello, 2007). According to Baade (2006) the rationale for the public funding of sport events relies on this contingent valuation. The method originates from environmental economics and has been adopted in other research fields dealing with nonmarket goods, such as health economics. Since 2000, CVM has become an regularly used method to estimate the intangible values in sport and is often used for measuring citizens' valuation of hosting sport events. Almost all research on the WTP for sport events has been in advance (ex-ante) of an actual or planned event, often the Olympic Games. Atkinson et al. (2008) and Walton, Longo and Dawson (2008) both demonstrated an ex-ante willingness-to-pay among UK residents toward funding for the 2012 London Olympics. Four years before the actual event they estimated the total intangible value to UK residents at approximately £2 billion (around €2.4 billion). Although substantial, this was well below the total public cost of hosting the Games of almost 9 billion pounds (BBC, 2013). Heisey (2009) researched residents' WTP for hosting the 2016 Summer Olympics in Berlin, San Francisco and Chicago. He found an average individual WTP varied from €16 for Berlin to \$36 (€31) for San Francisco and \$55 (€48) for Chicago. Using a German nationwide online survey, Wicker, Whitehead, Mason and Johnson (2016), estimate the average individual WTP for the 2024 Olympic Games over a five-year period at €51 per month, or over €3000 in total.

Very little research has been done after an actual sport event, which raises the question whether the ex-ante WTP still holds for the actual or ex-post WTP. Heyne, Suessmuth and Maennig (2007) present the (to our knowledge) only research of the WTP prior to as well as after a sporting event, in their case the 2006 Soccer World Cup in Germany. They find that total WTP increased by 129% after the event and conclude that sporting events therefore may be viewed as

experience goods. Additionally, Ma, Ma, Wu and Rotherham (2013) demonstrated that, from a behavioral perspective, local residents' perceptions of mega-event impacts vary pre-, during- and post-event. This raises the question whether the 'usage' of the sport event may explain the residents' valuation.

Use and Non-use values

According to Barget and Gougnet (2007) the 'use value' corresponds with the utility actually felt by the consumer at the sport event. Other values that contribute to the total economic value of sporting events constitutes are: the optional value (utility felt by people about the possibility of benefiting from the sporting event in the future), legacy value (long-lasting infrastructures as well as satisfaction felt as a result of handing down a sporting event to future generations) and existence value (utility from knowing that the event exists). These all represent values for non-users. Allmers and Maennig (2009) argue that sport events may have a 'nonuse effect', which also has to be considered. This is the benefit for the host country's population is, even for those individuals who do not visit the event. Reasons for benefits without experiencing the sporting event might be, among others, the increased topics of conversation and an increased national pride. The differences in valuation of an event between users and non-users have first been demonstrated by Anderson, Armbrecht and Lundberg (2012) for a music festival. This approach, developed in environmental economics, has also been successfully applied to culture (Armbrecht, 2014), but just very rarely in sports (Allmers & Maennig, 2009). In sports, Wicker et al. (2016) have shown that for German football teams different factors for attendees and non-attendees affect the decision to support the local team and the actual amount of WTP. Vekeman, Meulders, Praet, Colpaert and Van Puyenbroeck (2012) demonstrated that sporting events, such

as large cycling events, may have a value both for users, those who attend the event, and non-users, those who do not visit the event.

Many sport events (including the Giro d'Italia) attract much media attention and media coverage may play an important role in the public's perception of sport events (Gratton, Shibil & Coleman, 2006). Thus far, the aspect of following the event in the media has not been incorporated in WTP research. It is also absent from Barget and Gouguet's descriptions of any of the use value and three non-use values. Only event visitors are included in the use value, so perhaps media following may be considered an implicit part of the 'existence value' of an event. Therefore, to address a gap in the literature, we include media following in our research as an explanatory factor for WTP, in addition to the actual attendance of the event.

Method

To measure the willingness-to-pay (WTP) for non-market goods, two alternatives exist: the revealed preference method and the stated preference methods. The revealed preference method establishes WTP from observed behavior of the purchase of complementary or substitution goods. At best this method can only provide estimates for the 'use value' of an event (Vekeman et al., 2012). Because of the possible existence of intangible aspects, including non-use values such as happiness or pride, the WTP is more appropriately measured by the stated preference method. In the absence of ticket sales for the 'big start' of the Giro d'Italia, demand could not be measured through revealed preference, so we had to resort to an indirect measurement method.

Following similar research on cycling (Vekeman et al., 2012) and other sport events such as the Olympics (e.g., Coates & Szymanski, 2012, Wicker et al., 2012) we adopt the contingent valuation method (CVM), in which respondents are questioned directly about their willingness-to-pay. The CVM uses surveys to measure an individual's willingness-to-pay for a good or service (Coates & Humphreys, 2008). According to Carson (2000) this survey-based method is very appropriate to place 'monetary value on environmental goods and services not bought and sold in the marketplace' (p. 1413). A disadvantage of CVM is the hypothetical bias, or the tendency of respondents to overstate their WTP. To address this issue we incorporate an extensive and realistic reasoning for contributing to the event. To assess the WTP for hosting the big start of the Giro d'Italia in Gelderland, a standardized questionnaire was developed in which the inhabitants of Gelderland were presented with the following hypothetical situation:

As a result of the bankruptcy of a major sponsor of the 'big start' of the 2016 Giro d'Italia the organization has a major shortfall in the budget for the event. To still have the cycling race take place in Gelderland, residents are asked to contribute. If the total contribution of the public is insufficient, the Giro Start will be moved to Italy. What is the maximum amount of money that you personally are willing to contribute to maintain the start of the Giro d'Italia for Gelderland?

The survey question considering WTP can be formulated either as open-ended question or by using a dichotomous choice format. Green, Jacowitz, Kahneman and McFadden (1998) point out that a dichotomous approach has an anchoring effect which may distort the outcomes severely and conclude that an open-ended question most likely provides more information on the WTP. Castellanos, García and Sánchez (2011) confirm this finding in the sport context for the support of funding for a local professional football club. We therefore used the open-ended

question for the purpose of our research. We assume that the strategic bias – the tendency of respondents to fill in a lower than real value in fear of having to really pay the amount on a later date – to be negligible, because as we added an element of voluntariness to the WTP-question.

The survey was conducted using the Longitudinal Internet Studies for the Social sciences (LISS) panel of CentERdata at the Tilburg University. The LISS panel is the most representative panel for the Dutch population³ and consists of around 8000 individuals from circa 5000 households. The population we want to consider are all residents aged 16 and over from the Gelderland province were included. This amounted to 880 panel members. Respondents were questioned about 2 months before the event, from March 7th to April 3rd 2016 (T0); and immediately after the event from May 9th to June 6th 2016 (T1). In total 719 people participated in the first survey, of whom 642 also filled in the second survey (overall response rate of 73%). After eliminating incomplete surveys, the final dataset consisted of 572 respondents that filled in the questionnaire on both T0 and T1.

Table 1 shows the dependent and independent variables in our data panel. The dependent variables are the ex-ante willingness-to-pay (WTP0) and ex-post willingness-to-pay (WTP1). Standard socio-economic variables included were gender, age⁴, education, and household income. Additionally, sport-specific dummies were included for persons participating at least 12 times in the last 12 months in sports in general and in cycling in specific. Finally, dummies for

³ LISS is and based on a true probability sample of individuals (Colella, & Van Soest, 2013). For details on the LISS panel we refer to Scherpenzeel (2011).

⁴ Age2 represents age squared. It was included to accommodate non-linearities.

both visiting the event and following it in the media have been included; in both realization (at T1) and intention (at T0).

Data and Results

Table 2 reports the descriptive statistics of the sample. Half of the respondents (50.0%) were women, while the average age was 51.7 years. Three out of four persons were participating in sports, while 13.2% were active cyclists. The actual attendance of the event among the panel members was 26.4%, while the visit intention was 19.9%. Over half of the respondents (52.8%) followed the event in the media, while 47.2% intended to follow it two month prior to the event.

The results show that the average WTP was €3.58 before the event and €4.45 after the event. This is an increase of 24.3%. The Wilcoxon signed rank test for comparing matched samples (that are not normally distributed) dismisses the null-hypothesis that WTP₀ has the same median as WTP₁ ($P < 0.001$). The average ex-post WTP for the persons that had an ex-ante WTP of zero was €2.08. This increase was significantly larger than 0 ($P = 0.002$). By contrast, the average ex-post WTP of the persons with a positive ex-ante WTP decreased by €2.02 compared with their average ex-ante WTP. However, this change was not significant ($P = 0.17$). The average WTP of the persons that were willing to pay something decreased from €12.06 (for all people with a WTP > 0 at T0) to €11.30 (for all people with a WTP > 0 at T1).

Table 3 shows the number of respondents that were willing to pay something for hosting the event. The percentage changed significantly ($P < 0.001$) from 29.7% ex-ante to 39.3% ex-post. Of the persons that ex-ante did want to pay something for the event 23.6% did not want to pay anything after the event. Vice-versa, a similar percentage (23.5%) of the persons that ex-ante did

not want to pay anything for the event did want to pay anything ex-post. The Chi-squared test shows that the ex-ante and ex-post probabilities for a positive WTP differ significantly ($P < 0.001$). Hence, the timing of contingent valuation measurement of a sport event is important for its outcome.

For a CVM dataset with a relative large number of zeroes, a Tobit regression model can determine the effects of the independent variable on WTP. Alternatively, a hurdle model could be considered if a respondent's willingness-to-pay anything at all depends on other factors than the actual amount of payment, especially with a relative large number of zeroes (Castellanos et al., 2011). Regression analysis showed that models with dummy variables for WTP (1 being a positive WTP) showed the same explanatory variables to be significant as in models with actual WTP. So, the Tobit model was preferred to a hurdle model to estimate effects of the socio-economic, sport-related and 'use' variables on residents' WTP. For both T0 and T1 several Tobit models have been estimated, the outcomes of which are shown in Tables 4 and 5.

For both the ex-ante and ex-post regressions, four models are represented: a simple model with only visit and media as explanatory variables (intention at T0, realization at T1; Model 1); a full model with all explanatory variables (Model 2); a final model with visit, but without media (Model 3) and a final model with both visit and media use at T1 and intention at T0 (Model 4).

The results show that visiting the event and following the event in the media are important determinants of WTP, as both are highly significant predictors ($P < 0.01$) of WTP and the outcomes are robust for different model specifications. This holds true for both the ex-ante and the ex-post models. Also, the coefficients of the media variables in all Models 1, 2 and 4 are larger than those of the attendance variables, both for T0 and T1. This implies that at the individual level, the media use is more important than actually visiting the event for the valuation

of the model. In Table 4, Visit Intention has a higher coefficient in Model 3 than in Model 4, the same model but *with* Media Intention. Table 5 shows the same results for Visit Use and Media Use. This demonstrates that the model without a variable for media following (intention or realization), overestimates the effect of attending the event. At the same time that model underestimate the WTP for people who follow the event in the media. Since the number of people following the event in the media (52.7%) exceeds the visitors (26.4%), the importance of media usage for the valuation of the events at a macro level is even more important. Additionally, net household has a positive and significant relation with WTP, whereas gender and sport participation are not significantly related with the ex-ante WTP.

Discussion and Conclusion

The main aim of this research was to provides an ex-ante and ex-post contingent valuation of a large sport event, the ‘big start’ of the 2016 Giro d’Italia in the Gelderland province in the Netherlands. Two months prior to the event and in the month immediately after the event, a representative panel of residents from Gelderland was asked to state their willingness-to-pay for the event. The average ex-ante willingness-to-pay was €3.58, while the ex-post average was €4.45, a difference of 24%. The results show also that the ex-ante and ex-post chances of a positive WTP increased significantly from 29.7% to 39.3%. A simple extrapolation of these results would lead to a total ex-ante valuation of this event of €5.8 million for the 1.6 million adult residents of the host-area of Gelderland, rising up to €7.1 million after the event. Our findings echo those of Heyne et al. (2007), who also found a significant increase in WTP after the 2006 Football World Cup. Our research shows that ex-ante contingent valuations of the intangible effects of sport events may be an underestimation of the actual or ex-

post valuations. However, it is not possible to generalize these outcomes to other events. Moreover, we would not rule out the possibility of ex-ante overestimations, since the difference in valuation may be a reflection of, for example, the level of success or other characteristics of the event. We conclude that the timing of the measurement of WTP affects the outcomes strongly, which is valuable information, in particular for policymakers that have to decide whether or not to host or organize an event. Future research on the valuation of sport events may include other factors, such as the weather, the (chance of) success of local participants or a home team or competitive balance (such as in Nalbantis, Pawlowski & Coates, 2017).

Results of the Tobit regressions show that both visiting the event and following the event in the media lead to a significant higher willingness-to-pay. Remarkably, the effect of the latter is larger than the former, both in intention (ex-ante) and in realization. This means that media usage for the valuation of the intangibles of an event such as the Giro d'Italia (free to visit, but also free to watch on the television) may be more important than actual visiting the event, not only because it had a higher impact at the individual level, but also because if applied to a larger share of the population (53% versus 26%). Media-coverage and media-consumption of a sport event can be therefore have a strong influence on the public's valuation of that event. We advise to add a 'broad use' to complement the traditional 'narrow' perception of 'use' of events, which only includes actual visiting the event. To get a better understanding of the role of media-coverage and media-following in the valuation of events more research is needed. The results do, however, show that media can play a very important role in the residents' perception of a sport event, which is valuable information for both public policymakers and event organizers.

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Tables

Table 1. Variables Description.

	Question	Type	Description
Dependent			
WTP0	What is the maximum amount of euros that you personally would be prepared to contribute to make the Giro start in Gelderland possible?	Metric	Open question format WTP
WTP1	What is the maximum amount of euros that you personally would have been prepared to contribute to make the Giro start in Gelderland possible?	Metric	Open question format WTP
Independent			
Visit Intention	Do you intend to visit the Giro in Gelderland on one or more days?	Dummy	Yes = 1
Visit Use	Did you visit the Giro in Gelderland on one or more days (dummy)	Dummy	Yes = 1
Media Intention	Do you intend to follow the Giro in Gelderland in the media?	Dummy	Yes = 1
Media Use	Have you followed the Giro in Gelderland in the media?	Dummy	Yes = 1
Female	Gender	Dummy	Female = 1
Age	Year of birth	Metric	Age
Age2	Age squared	Metric	Age squared

Education	Education in 7 categories	Ordinal	6 categories from 'primary school education' to 'university degree'
Income	If you add up your income, how high is your net monthly household income (after taxes and other deductions and including allowances)?	Ordinal	4 categories: €1150 or less; €1151-€1800; €1801-2600; €2601 or more)
Sporter	Have you participated in sport at least 12 times in the last 12 months?	Dummy	Yes = 1
Cyclist	Have you participated in cycling (as a sport) or mountainbiking at least 12 times in the last 12 months?	Dummy	Yes = 1

Table 2. Descriptive Statistics.

	Obs.	Mean	St. Dev.	Min.	Max.
Dependent					
WTP0	572	3.584	10.298	0	1
WTP1	572	4.446	10.713	0	1
Independent					
Visit Intention	572	0.199	0.400	0	1
Visit Use	572	0.264	0.441	0	1
Media Intention	572	0.472	0.500	0	1
Media Use	572	0.528	0.500	0	1
Female	572	0.519	0.500	0	1
Age	572	51.713	18.241	16	91
Age2	572	3006.4	1833.0	256	8281
Education	572	3.608	1.475	1	6
Income	572	3.259	0.952	1	4
Sporter	572	0.757	0.429	0	1
Cyclist	572	0.132	0.340	0	1

Table 3: Percentage of respondents with WTP>0, at T0 and T1

		WTP1			
		No	Yes	Total	%
WTP0	No	307	95	402	70.3%
		76.4%	23.6%		100%
	Yes	40	130	170	29.7%
		23.5%	76.5%		100%
	Total	347	225	572	
		60.7%	39.3%		100%

Table 4. Estimation Results of the Models for ex-ante Willingness-to-pay (WTP0).

	Model 1	Model 2	Model 3	Model 4
Visit Intention	10.47*** (2.956)	10.74*** (3.012)	16.99*** (2.829)	11.02*** (2.976)
Media Intention	12.73*** (2.689)	13.11*** (2.764)		12.26*** (2.644)
Female		0.864 (2.427)		
Age		-0.422 (0.340)		
Age2		0.00360 (0.00341)		
Education		-1.794** (0.871)	-2.127** (0.851)	-1.934** (0.842)
Income		0.00191** (0.000816)	0.00210** (0.000829)	0.00202** (0.000817)
Sporter		4.185 (3.011)		
Cyclist		-0.510 (3.519)		
Constant	-22.36*** (2.390)	-14.24* (8.418)	-15.77*** (3.703)	-21.12*** (3.961)
σ	22.21*** (1.334)	21.68*** (1.298)	22.29*** (1.343)	21.81*** (1.307)
N	572	572	572	572
Log likelihood	-940.37	-933.81	-947.71	-936.32

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 5. Estimation Results of the Models for ex-post Willingness-to-pay (WTP1).

	Model 1	Model 2	Model 3	Model 4
Visit Use	6.311*** (2.261)	5.797** (2.283)	9.845*** (2.182)	5.623** (2.271)
Media Use	9.375*** (2.142)	10.23*** (2.208)		10.17*** (2.202)
Female		1.894 (2.024)		
Age		-0.650** (0.286)	-0.677** (0.283)	-0.708** (0.278)
Age2		0.00614** (0.00289)	0.00686** (0.00284)	0.00674** (0.00279)
Education		-0.610 (0.716)		
Income		0.00211*** (0.000673)	0.00193*** (0.000661)	0.00195*** (0.000652)
Sporter		4.051 (2.490)		4.063* (2.432)
Cyclist		1.468 (2.960)		
Constant	-14.15*** (1.827)	-7.731 (7.009)	-1.423 (6.636)	-6.989 (6.838)
σ	19.86*** (1.025)	19.44*** (1.000)	19.95*** (1.032)	19.48*** (1.002)
N	572	572	572	572
Log likelihood	-1175.93	-1165.82	-1179.17	-1166.71

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1



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