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*Hosting the Olympics or not:
how individuals decide*

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Overview

Table of contents	IV
List of tables	VI
List of figures.....	VII
List of abbreviations	VIII
1 Introduction.....	1
2 Paper I - Is it the economy, stupid? The role of social versus economic factors in people's support for hosting the Olympic Games: evidence from 12 democratic countries.....	13
3 Paper II - Anticipated feelings and the support for public mega projects	23
4 Paper III - Referenda on hosting the Olympics: What drives voter turnout? Evidence from 12 democratic countries.....	54
5 Conclusion	96
6 References.....	104

Table of contents

Table of contents	IV
List of tables	VI
List of figures.....	VII
List of abbreviations	VIII
1 Introduction.....	1
1.1 Background and motivation.....	2
1.2 Research questions and theoretical relevance.....	4
1.3 Research approach and data set	6
1.4 Outline and abstracts.....	9
2 Paper I - Is it the economy, stupid? The role of social versus economic factors in people's support for hosting the Olympic Games: evidence from 12 democratic countries.....	13
2.1 Introduction.....	15
2.2 Data and econometric method	16
2.3 Results.....	19
2.4 Conclusion	22
3 Paper II - Anticipated feelings and the support for public mega projects	23
3.1 Introduction.....	25
3.2 Theory development and hypotheses.....	26
3.3 Method	32
3.4 Results.....	40
3.5 Discussion.....	46

4	Paper III - Referenda on hosting the Olympics: What drives voter turnout? Evidence from 12 democratic countries.....	54
4.1	Introduction.....	56
4.2	Referenda on mega-sport events and voter turnout	58
4.3	Hypotheses and empirical framework	64
4.4	Results and discussion	72
4.5	Conclusion	81
5	Conclusion	96
5.1	Overall summary.....	97
5.2	Research contribution and future directions	100
6	References.....	104

List of tables

Table 1 - Measurement and rational for variables	18
Table 2 - Support for hosting the Olympics (probit models).....	20
Table 3 - Cross-country measurement invariance tests	37
Table 4 - SEM results: Model fit and structural path coefficients.....	43
Table 5 - Factors that shape voter turnout (final model).....	73

List of figures

Figure 1 – Comparison of average marginal effects	21
Figure 2 - Research model.....	29
Figure 3 - Measurement of optimism (based on Scheier et al., 1994) adjusted for social desirability (Rauch et al., 2007).....	34
Figure 4 - Full structural equation model (overall model).....	42
Figure 5 - Moderating role of effortful processing on affective forecasting.....	45
Figure 6 - Olympic referenda model (ORM).....	61
Figure 7 - Drivers of the turnout decision in the Olympic referenda model.....	65
Figure 8 - Quadratic effect of support on voter turnout (pooled sample).....	74
Figure 9 - Quadratic effect of optimism on voter turnout (pooled sample)	76

List of abbreviations

abs.	Absolute
AIC	Akaike information criterion
AT	Austria
AVE	Average variance extracted
BIC	Bayesian information criterion
CH	Switzerland
CI	Confidence interval
CEO	Chief executive officer
c.f.	Compare (Latin)
CFA	Confirmatory factor analysis
CFI	Comparative fit index
CR	Composite reliability
CSM	Center for Sports and Management
df	Degrees of freedom
e.g.	For example (Latin)
ESP	Spain
est.	Estimated
et al.	And others (Latin)
FIFA	Fédération Internationale de Football Association
FRA	France
GDP in PPP	Gross domestic product in purchasing power parity
GER	Germany
GRE	Greece
i.e.	That is (Latin)
IOC	International Olympic Committee (IOC)

Table of contents

IT	Italy
LOT-R	Life Orientation Test-Revised
LMS procedure	Latent moderated structural equation procedure
LR	Likelihood ratio
McFadden's R^2	McFadden's coefficient of determination
MG-CFA	Mutli-group confirmatory factor analysis
Mplus	Latent variable modeling program by Muthén & Muthén
NIMBY problem	'Not in My Backyard' problem
n	Sample size
NOR	Norway
ns	Not significant
OLS regressions	Ordinary least squares regressions
ORM	Olympic Referenda Model
p.	Page
POL	Poland
Pr()	Probability function
Probit model	Type of regression model where the value of the dependent variable is either zero or one unit (probit = <i>probability</i> + <i>unit</i>)
R^2	Coefficient of determination
RMSEA	Root mean square error of approximation
SESM conference	Sport Economics & Sport Management conference
SEM	Structural equation model
SRMR	Standardized root mean square residual
STATA	Statistical software package by StataCorp
SWE	Sweden

Table of contents

TV	Television
UK	United Kingdom
US	United States
USD	United States dollar
vs.	Versus
WHU	Wissenschaftliche Hochschule für Unternehmensführung

1 Introduction

1.1 Background and motivation

Unparalleled seems an appropriate word when characterizing the Olympic Games in today's society. No other sports event parallels the Olympic Games in their reach of 70% of the world population via mass media (Maennig & Zimbalist, 2012c). No other sports event has ever created estimated costs of up to USD 50 billion (Boykoff, 2014a). And no other sports event is similarly used by leaders to demonstrate their country's political and economic power (Baade & Matheson, 2016). The Olympic Games have thus a high perceived economic and social significance for our society (Maennig & Zimbalist, 2012b).

Their economic significance, however, has been challenged. Economists have created "bookshelves" (Schmidt, 2017, p. 119) worth of publications examining the economic impact of the Olympics. Peer-reviewed studies, in contrast to commissioned studies, find no or hardly any net economic impact of hosting the Olympics (Billings & Holladay, 2012; Mitchell & Stewart, 2015; Sullivan & Leeds, 2015). Although there are some indications for a positive social significance of the Olympics, such as increased community spirit and strengthened sports culture (Kaplanidou & Karadakis, 2010; Mitchell & Stewart, 2015), citizens seem to turn their back on hosting the Olympics by voting against it in public referenda. Such referenda have recently ended six applications to host the Olympics.¹ Moreover, Boston, Budapest and Rome stopped their ambitions to host the 2024 Olympics due to a lack of public support and calls for referenda.

Unlike research on the economic impact of hosting the Olympics, research examining why people reject hosting the Olympics is scarce. I attribute this scarcity to three main

¹ Graubünden, Munich, and Krakow for the 2022 Olympics, Hamburg for the 2024 Olympics, Graubünden again for the 2026 Olympics, and Vienna for 2028 Olympics.

reasons. First, referenda have only recently gained momentum in supporting or hindering the hosting of the Olympics. While elected city representatives such as mayors have formerly decided on their city's host ambitions, citizens nowadays decide on their own through referenda (Coates & Wicker, 2015), making Olympic referenda a relatively new phenomenon with little lead time for research to evolve.

Second, the Olympic Games are designed as a cross-national event (International Olympic Committee, 2016b) and the rise in referenda is a cross-national observation (Casella & Gelman, 2008), underlining the importance to also examine the combination of the two in a cross-national setting. Conducting cross-national research is, *ceteris paribus*, more cost-intensive than focusing the research scope on single countries. It is therefore likely that the costs associated with cross-national research pose an entry barrier for scholars interested in examining Olympic referenda.

Third, referenda on hosting decisions are unlikely to occur in the “emotional vacuum” (Elsbach & Barr, 1999, p. 191) of rational decision-making that is assumed in the traditional economics literature. Hosting decisions seem to polarize supporters and opponents of hosting the Olympics. For example, after the drop-out of Boston for the 2024 Summer Olympic Games, IOC president Thomas Bach said that he hopes that the discussions around the next U.S. applicant city will be “a little bit more oriented on facts than emotions” (Associated Press, 2015, p. 1). Economists interested in deciphering Olympic referenda decisions thus need to draw on literature beyond economics to integrate rational and non-rational decision components into their models, which necessarily increases research complexity.

The motivation for my dissertation is to help overcoming these three challenges, thereby extending our understanding of hosting decisions at Olympic referenda. To cope with

the novelty of Olympic referenda as a research topic and the scarce existing economic research on the latter, I extend my literature scope beyond the Olympics (e.g., by also looking at other mega sport event literature) within the economics field and also integrate literature from decision science, political science and psychology. With respect to the second challenge of cross-national research, I am grateful to have access to a unique, population-representative data set with 12,000 participants from eleven European countries and the United States. I use appropriate statistical measures (e.g., measurement invariance testing using structural equation models in the second paper) to allow for meaningful cross-country comparisons. To address the third challenge that purely rational models of decision making potentially fall short of Olympic referenda decisions, I extend my analyses to non-economic factors in all papers and dedicate my second paper to a dual process model of decision making at Olympic referenda, thereby hoping to contribute to a recently growing body of economic research on the role of feelings in individual decision-making (c.f. Kahneman, 2012).

Considering all of the above, I hope to contribute to answering the following overarching question of my dissertation: *how do individuals decide on their support for hosting the Olympics at referenda and what determines their turnout at such referenda?*

1.2 Research questions and theoretical relevance

To answer the question of *how individuals decide on their support* for hosting the Olympics, I differentiate between the decision content and the decision process. In order to examine *what determines individuals' turnout* at such referenda, I analyze different categories of turnout determinants derived from general turnout research. I address these three topics with three research questions:

Introduction

Research questions and theoretical relevance

Question I: To what extent do economic versus social factors influence individuals' voting behavior at referenda on hosting the Olympics?

Question II: How do the intuitive and deliberate mental systems of individuals interact when they decide at referenda on hosting the Olympics?

Question III: What are the determinants of individuals' voter turnout at referenda on hosting the Olympics?

Research question I is relevant because it can on the one hand help solving a disjunction between research and practice and on the other hand contribute to rebalancing the focus of economics research on the Olympics. For that purpose, it is crucial to bear in mind that economists find no or hardly any evidence of economic benefits from hosting the Olympics (Billings & Holladay, 2012; Mitchell & Stewart, 2015; Sullivan & Leeds, 2015). Proponents of hosting the Olympics nevertheless run multi-million dollar campaigns that primarily promise economic benefits (Mitchell & Stewart, 2015), which have in many cases failed to establish sufficient public support for hosting the Olympics. Schmidt (2017, p. 120) hence argues that economics research on the Olympics has “minor or no effects on the real world”. He suggests extending the scope of analysis to overall social welfare (Schmidt, 2017), which includes both economic and social factors. Putting economic and social factors into direct comparison can thus be a first step to alter the priority given to economic factors in both campaigns and research on hosting the Olympics.

Research question II contributes to our understanding of mental processes underlying complex decisions, in particular the decision to support or reject hosting the Olympics. If people face complex decisions, they tend to rely on heuristics instead of systematically evaluating the pros and contras of a decision (Slovic, Finucane, Peters, &

MacGregor, 2002). Considering that the decision to host or not to host the Olympics is a complex decision, it seems worth examining heuristics that individuals apply consciously or subconsciously to the hosting decision, which has – to the best of my knowledge – not yet been done for the context of Olympic referenda. Even beyond this context, the mental process underlying complex decisions seems to be a topic worth examining. Despite a decade-old call by leading economists (Loewenstein, Weber, Hsee, & Welch, 2001), empirical research on the interplay of affective and deliberative decision processes is scarce (Mikels, Maglio, Reed, & Kaplowitz, 2011). By modeling and testing the interplay of the two in a dual process model, I thus hope to advance our understanding of complex decision-making within and beyond the Olympics context.

Research question III is relevant because the outcome of referenda is affected by both the decision for or against hosting the Olympics and the decision to cast a vote at the referendum. The latter decision has received little attention in research on the Olympics, even though it is well-known from political science that voter turnout can change the referendum outcome (Hajnal & Trounstine, 2005; Lutz, 2007), lead to a misrepresentation of minorities (Hajnal & Trounstine, 2005) and reduce the acceptance of referendum outcomes (Franklin, 1999; Lutz, 2007). By transferring and testing findings from political science in the Olympic hosting context, I thus intend to create an exploratory basis for further research on turnout at Olympic referenda.

1.3 Research approach and data set

While the three outlined research questions address the same context, namely Olympic referenda, their answers requires the use of distinct theories and statistical methods for each of the three questions. I therefore address them in three stand-alone research papers.

For paper I, I estimate a binary probit model to analyze the predictors of the binary decision to be in favor or not in favor of hosting the Olympics. I estimate average marginal effects for each predictor from the two predictor categories, economic factors and social factors, to draw conclusions about their relative importance for an individual's hosting decision. I use the statistics software STATA 14 for the analyses. Literature on mega sports events and the Olympics in particular, mainly from the field of sports economics, provides the theoretical basis for this paper.

For paper II, I employ the latent moderated structural equation (LMS) procedure recently outlined by Sardeshmukh and Vandenberg (2016) to estimate a structural equation model with moderated-mediation of latent variables. I chose this procedure because it is, to the best of my knowledge, the best statistical procedure available to model interactions between affective and deliberative decision components in the overall decision process on hosting the Olympics. Considering that the model involves latent psychological constructs that can have a different meaning across the twelve countries of the study, I apply Jöreskog's (1971) multi-group confirmatory factor analysis (MG-CFA) and conduct stepwise tests of the three most commonly distinguished types of measurement invariance: configural, metric, and scalar measurement invariance (Rutkowski & Svetina, 2014; Steenkamp & Baumgartner, 1998). In contrast to the other two papers of this dissertation, I use the statistics software Mplus due to its superior latent variable modeling capabilities.² In addition to economics and methodological literature, literature from psychology and decision science serves as theoretical basis of the analyses.

² Mplus, in contrast to STATA 14, can handle mediated-moderation of latent variables in a multi-group model, which is needed given the 12 countries considered.

For paper III, I estimate ordinary least squares (OLS) regressions with robust standard errors to analyze the predictors of individual voter turnout. Where theory suggests non-linear relationships for the hypotheses, I test different model specifications (linear vs. quadratic vs. cubic) against each other. I use the statistics software STATA 14 for the analyses. In addition to sports economics literature, I draw on general voter turnout literature from political science as theoretical basis for this paper.

The papers use data from a population-representative online survey that was preceded by a five-month preparation from November 2014 until March 2015. In the course of these five months, I developed the English language questionnaire based on a literature review and regular review sessions with Prof. Dr. Sascha L. Schmidt and Jun.-Prof. Dr. Dominik Schreyer. These review sessions were complemented by input from Prof. Dr. Benno Torgler, as well as feedback and pre-tests by my fellow PhD students on an individual basis and during the formal “brown bag” research seminar series at the Center for Sports and Management. By mid-February 2015, a fellow PhD student, who is a native English speaker, reviewed the English questionnaire to ensure language accuracy.

The result of this multi-stage process was a literature based, English language questionnaire addressing the distinct variables needed for each paper. For Paper I, a set questions on social versus economic factors and their influence on the support for hosting the Olympics was included in the questionnaire (see Table 1 in chapter 2). For Paper II, a question to proxy affective forecasting and several questions to reflect the latent variables identification, optimism and effortful processing were included in the questionnaire (see Appendix 2). And lastly, for Paper III, several questions to reflect voter turnout and its additional influencing factors such as mobilization factors were included in the questionnaire (see Appendix 4a and 4b).

By the end of February 2015, this English original questionnaire was handed over to the market research company Nielsen Sports (formerly: Repucom) that commissioned the translation/back-translation of local language versions by native speakers, programmed the local language versions of the online survey and recruited the respondents in the United States of America and the following 11 European countries: Austria, France, Germany, Greece, Italy, Norway, Poland, Spain, Sweden, Switzerland and the United Kingdom.

This country selection was based on three criteria that I developed. First, I required at least the democracy status *flawed democracy* according to the Economist's Democracy Index to only pick countries where a referendum on the Olympics is realistic (The Economist Intelligence Unit, 2014). Second, I decided to focus on countries that hosted or had the ambition to host the Olympics as indicated by a host city application within the last 20 years. Third, I prioritized the remaining European countries based on the gross domestic product in purchasing power parity (GDP in PPP) to proxy the absolute welfare gain or loss potential from referenda decisions on hosting the Olympics.

Between March and April 2015, a total of 14,051 respondents from the above-mentioned countries took part in the survey. 753 respondents were excluded due to overly rapid completion and uniform response patterns and an additional 1,298 respondents were excluded because they participated in the survey after quota targets in terms of age, gender, country, and region were already achieved. This resulted in a population-representative data set with 12,000 respondents in 12 countries.

1.4 Outline and abstracts

The main part of this dissertation consists of five chapters. Following the introduction in this chapter that concludes with an abstract of all three papers, the chapters two, three

and four comprise the actual three stand-alone papers with independent introduction, theory, analysis, discussion, and conclusion parts. The fifth chapter summarizes the contributions of this dissertation and suggests directions for future research.

1.4.1 Paper I: Is it the economy, stupid? The role of social versus economic factors in people's support for hosting the Olympic Games: evidence from 12 democratic countries

The first paper examines the relative importance of social versus economic factors for individual decisions on hosting the Olympics. Although economists are skeptical that hosting the Olympics has an economic effect, the results of paper I suggest that potential economic benefits influence individual's support for a hosting. Social factors, however, have a stronger influence than economic factors for individual support for hosting the Olympics. These findings have both implications for practice and research. Practitioners involved in campaigning for the Olympics could benefit from rebalancing the traditional focus of pro-Olympic campaigns from economic to social factors. Researchers could continue to extend the scope of their analysis to social factors because they have a higher relative importance for individual hosting decisions.

The paper is co-authored by Prof. Dr. Sascha L. Schmidt, Jun.-Prof. Dr. Dominik Schreyer, and Prof. Dr. Benno Torgler. It is published in *Applied Economics Letters* (Streicher, Schmidt, Schreyer, & Torgler, 2017b). Major findings are also reported in the book chapter 'Hosting the Olympic Games' by Schmidt (2017).

1.4.2 Paper II: Anticipated feelings and the support for public mega projects

The second paper integrates affective forecasting and dual process theory to examine the interplay of affective and deliberate decision components in the overall decision process on hosting the Olympics. Paper II provides evidence for a strong role of

expected feelings in reasoning processes and underline the effect of identification as an important context-specific antecedent of expected feelings. It further demonstrates that the level of effortful processing moderates the impact of expected feelings on individuals' decisions. The findings thus contribute to the understanding how the electorate makes decisions on public mega-projects, which is difficult to understand from a classicist view of rational decision-making. The paper intends to provide a lens for policy makers and researchers to better analyze past and prepare for future referenda.

The paper is co-authored by Prof. Dr. Sascha L. Schmidt, Jun.-Prof. Dr. Dominik Schreyer, and Prof. Dr. Benno Torgler. An earlier version of the paper has been accepted for presentation at the *Sport Economics & Sport Management* (SESM) conference 2017 in Berlin. The paper has been submitted for publication in a leading journal.

1.4.3 Paper III: Referenda on hosting the Olympics: What drives voter turnout?

Evidence from 12 democratic countries

The third paper draws on sports economics and political science literature to derive a model, the Olympic Referenda Model (ORM), which serves as the basis for analyzing the determinants of voter turnout at Olympic referenda. The paper's findings point at a crucial role of polarization of the electorate for voter turnout and at an asymmetry of the mobilization effect of opponents' versus supporters' arguments. Opponents' arguments have a stronger influence on voter turnout than pro-hosting arguments of supporters. From a practitioner's perspective, the paper suggests the use of (de-)polarization strategies for Olympic campaigns, e.g., "asymmetric demobilization" that some political scientists believe has contributed to German Chancellor Merkel's electoral success (Arnold & Freier, 2016), and a professionalization of the supporters' communication

due to the comparative disadvantage of their arguments against the opponents' arguments. With respect to research, this paper is the first to integrate sports economics and political science literature into a coherent model on turnout at Olympic referenda, the ORM, which is subsequently tested. It can hopefully serve as a useful starting point for further research on this topic.

While this paper benefitted greatly from feedback by Prof. Dr. Sascha L. Schmidt and Jun.-Prof. Dr. Dominik Schreyer, it has not been co-authored in its current form. The paper has been submitted for publication in a leading sports economics journal and is currently in the second review round.

2 Paper I - Is it the economy, stupid?

The role of social versus economic factors in people's support for hosting the Olympic Games: evidence from 12 democratic countries³

³ Streicher, T., Schmidt, S. L., Schreyer, D., & Torgler, B. (2017b). Is it the economy, stupid? The role of social versus economic factors in people's support for hosting the Olympic Games: evidence from 12 democratic countries. *Applied Economics Letters*, 24(3), 170–174.

Abstract

Public referenda have gained momentum as a democratic tool to legitimize public mega projects such as hosting the Olympic Games. Interest groups in favor of hosting the Olympics therefore try to influence voters through public campaigns that primarily focus on economic benefits. However, recent studies find no or hardly any economic impact of hosting the Olympics, instead providing evidence for a positive social impact. This raises the question whether citizens consider economic or social factors when deciding on hosting the Olympics. Based on representative survey data from 12 countries, our results suggest that economic factors can influence voting behavior, although the influence of social factors is stronger.

Keywords: Public referenda; Campaigns; Mega sport events; Olympic Games; Hosting

2.1 Introduction

Be it the Greek referendum on bailout measures, the Scottish referendum on independence from the UK, or upcoming referenda on the liberalization of marijuana in several American states, referenda have gained momentum as a tool of democracy (Casella & Gelman, 2008). Mega sport events such as the Olympic Games are not exempt from this trend. While in the past mainly mayors and city councils have decided on applying for hosting the Olympics, nowadays, citizens often decide on their city's host ambitions through public referenda (Coates & Wicker, 2015). Proponents of hosting the Olympics react to this trend with multi-million dollar campaigns. Such campaigns follow Bill Clinton's famous 1992 presidential campaign mantra 'It's the economy, stupid' and focus on promising economic benefits from hosting (Mitchell & Stewart, 2015). However, public support for the Olympics seems to have diminished in Europe and the United States, despite extensive campaigns with their promise of economic benefits.⁴

This leads to the question whether citizens are receptive to the promise of economic benefits because otherwise, campaign budgets could be better spent differently. Recent studies indeed raise doubts about economic benefits from hosting the Olympics, finding no or hardly any economic impact (Billings & Holladay, 2012; Mitchell & Stewart, 2015; Sullivan & Leeds, 2015). Citizens might thus put little weight on economic factors when deciding on hosting the Olympics. Instead, they might focus on social factors relating to the Olympics, e.g., increased community spirit and strengthened sports culture (Kaplanidou & Karadakis, 2010; Mitchell & Stewart, 2015). Such factors

⁴ More recently, Boston (USA) and Hamburg (Germany) withdrew their plans to host the 2024 Summer Olympics amid a lack of public support. For the same reason, the European cities of Graubünden, Krakow, Munich, Oslo, and Stockholm decided not to apply for the 2022 Winter Olympics.

could influence citizens because they contribute to an individual's welfare, which goes beyond material aspects captured by measures of economic activity (Frey & Stutzer, 2010).

In this study we therefore explore whether economic or social factors are key in determining citizens' voting behavior. Our results suggest that *potential* economic benefits influence voting behavior, even though economists are skeptical that they occur. However, the influence of social factors is stronger. Interest groups in favor of hosting the Olympics could therefore benefit from shifting the focus of their campaigns from economic to social factors.

2.2 Data and econometric method

We collected data between March and April 2015 via a representative online survey in 12 countries: Austria, France, Germany, Greece, Italy, Norway, Poland, Spain, Sweden, Switzerland, the United Kingdom, and the United States.⁵ The market research company Repucom hosted the survey. A total of 14,051 participants completed the questionnaire, of which Repucom excluded 753 participants due to quality checks and 1,298 further participants that completed the questionnaire after quota targets in terms of age, gender, country, and region were already fulfilled, providing a representative data set with 12,000 valid responses (1,000 per country).

⁵ The countries were selected based on four criteria: 1) location in Europe or the USA, 2) democratic system according to the Democracy Index 2013 by The Economist Intelligence Unit (2014), 3) prior hosting aspiration as documented by an application for or hosting of the Olympics since 1994, and 4) gross domestic product in purchasing power parity in US Dollars for 2015.

Using this data set, we estimate binary probit models to analyze the influence of social and economic factors on the support for hosting the Olympics (SUPPORT). Our full model specification is as follows:

$$\begin{aligned} \Pr(\text{SUPPORT} = 1) = & \Phi (\beta_0 + \beta_1 \text{TAX} + \beta_2 \text{TRANSP} + \beta_3 \text{SHARE} \\ & + \beta_4 \text{ECONIMP} + \beta_5 \text{INFRA} + \beta_6 \text{COMM} \\ & + \beta_7 \text{REPU} + \beta_8 \text{SPOC} + \beta_9' \text{CONTROLS}) \end{aligned}$$

where SUPPORT, our dependent variable, is based on survey participants' responses to the statement '*I am in support of hosting the Olympic Games in [country]*'. The responses were initially recorded on a 5-point Likert scale and then recoded to account for the binary nature of public referenda (see Table 1).

The independent variables include five variables on economic factors and three variables on social factors that reflect responses on a 5-point Likert scale to the statement '*Personally, it is important to me that...*'. In addition, a number of control variables, CONTROLS, were included. Table 1 on the next page describes all variables and explains the rationale for considering them.

Table 1 - Measurement and rationale for variables

Variables	Description and response format	Rationale for including variable
Dependent variable		
SUPPORT	'I am in support of hosting the Olympic Games in [country].' (1 'strongly agree' or 'agree', 0 'strongly disagree', 'disagree' or 'neither/nor')	<ul style="list-style-type: none"> Support of the population is a major requirement for hosting the Olympics (Coates & Wicker, 2015)
Independent variables		
'Personally, it is important to me that...' (1 'strongly disagree', 2 'disagree', 3 'neither/nor', 4 'agree', 5 'strongly agree')		
Economic factors		
TAX	'...no extra costs to the taxpayers are incurred by hosting the Olympic Games in [country].'	<ul style="list-style-type: none"> Citizens are potentially taxed to pay off public debt created by mega sport events (Essex & Chalkley, 1998)
TRANSP	'...there is transparency in the total expenditure and the intended purpose of the funds that will be spent relating to the Olympic Games in [country].'	<ul style="list-style-type: none"> Lack of transparency is considered to lead to exuberance associated with hosting the Olympics (Mitchell & Stewart, 2015)
SHARE	'...revenue and expenditure relating to the Olympic Games will be distributed fairly among the public sector and the sport federations.'	<ul style="list-style-type: none"> Despite high expenditures for hosting the Olympics, host cities' share in broadcasting revenues has fallen in favour of the IOC over the last 60 years (Maennig & Zimbalist, 2012a), potentially raising concerns about distributional fairness
ECONIMP	'...the [country] population benefits permanently from economic impulses, which result from hosting the Olympic Games.'	<ul style="list-style-type: none"> Interest groups for hosting mega sport events usually promise economic benefits from hosting (Mitchell & Stewart, 2015)
INFRA	'...a sustainable concept for the subsequent use of the infrastructure created for the Olympic Games exists.'	<ul style="list-style-type: none"> Sport mega events require large investments in infrastructure but can foster urban development (Malfas, Houlihan, & Theodoraki, 2004)
Social factors		
COMM	'...the sense of community in [country] will be strengthened by hosting the Olympic Games.'	<ul style="list-style-type: none"> Increase in community spirit can be a legacy of the Olympics (Kaplanidou & Karadakis, 2010)
REPU	'...the [country]'s international reputation will be strengthened by hosting the Olympic Games.'	<ul style="list-style-type: none"> Mega events like the Olympics are used to promote a country's reputation (Lamla, Straub, & Girsberger, 2014)
SPOC	'...the sports culture in [country] will be strengthened by hosting the Olympic Games.'	<ul style="list-style-type: none"> Positive impact on sports culture is a frequent argument for hosting the Olympics (Mitchell & Stewart, 2015)
Control factors		
(AGE in years, GENDER dummy (male = 1), HHINCOME dummies for low and high household net income groups, POLVIEW dummies for the political view, and COUNTRY dummies for the country of residence of respondents)		

2.3 Results

To examine the effect of economic and social variables on the support for hosting the Olympics, three binary probit models have been estimated: (1) an economic factors model, (2) a social factors model, and (3) an overall model that includes both economic and social factors (see Table 2).

The results in column (1) indicate that economic factors have a significant impact on citizens' support for hosting the Olympics. Thus, the *potential* economic impact of hosting the Olympics plays a role when people decide on hosting the Olympics, despite economists' skepticism of such impact.

Apart from economic factors, the results in column (2) show that social factors also have a significant impact on the support for hosting the Olympics. The evaluation criteria at the bottom of Table 2 indicate a better fit of the social factors model as compared to the economic factors model, offering a first indication that social factors could be more important than economic factors in influencing the support for hosting the Olympics.

The overall model in column (3) reveals that considering both economic and social factors further improves model fit. For example, both the difference in the BIC' statistics for the economic or the social versus the overall model provide 'very strong' evidence (Raftery, 1995, p. 139) to prefer the overall model over the two other models. When examining the citizens' support for hosting the Olympics, it is therefore beneficial to consider both economic and social factors.

Table 2 - Support for hosting the Olympics (probit models)

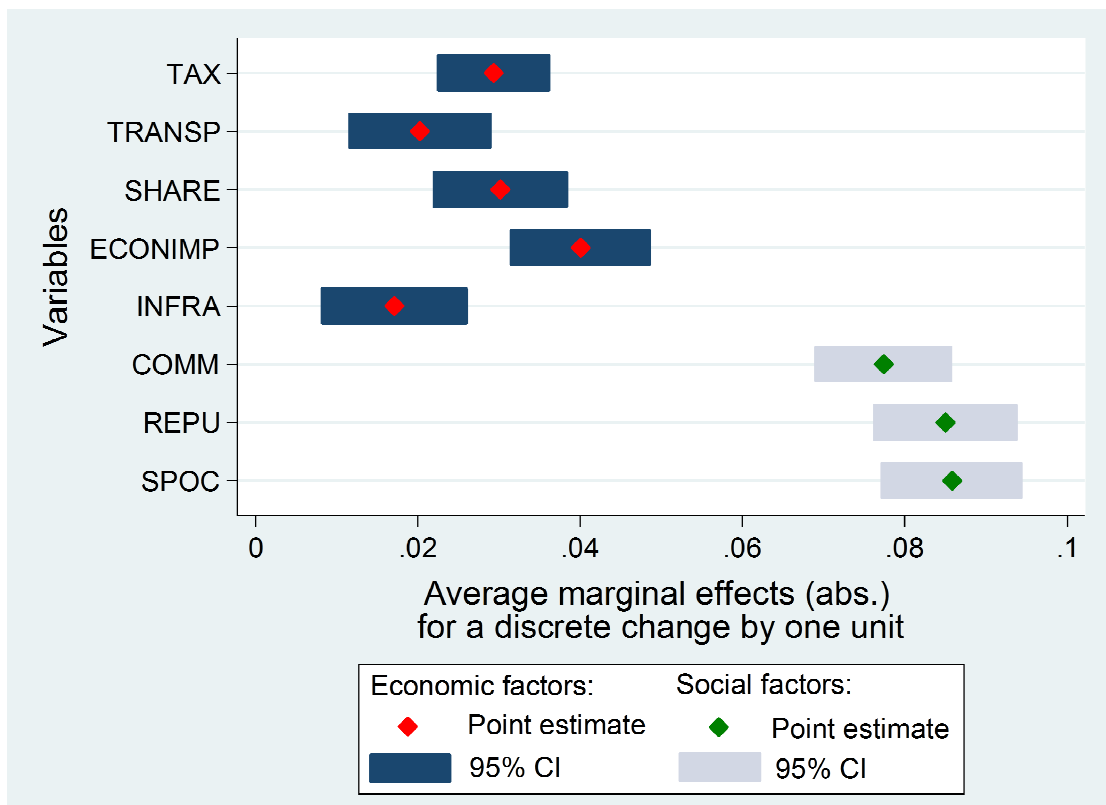
Independent variables	(1)	(2)	(3)
	Economic factors model	Social factors model	Overall model
	Coefficient (est.)	Coefficient (est.)	Coefficient (est.)
<i>Economic factors</i>			
TAX	-0.138 *** (11.400)		-0.112 *** (8.353)
TRANSP	-0.063 *** (4.192)		-0.077 *** (4.575)
SHARE	0.241 *** (16.865)		0.116 *** (7.149)
ECONIMP	0.395 *** (26.679)		0.154 *** (8.966)
INFRA	0.191 *** (12.325)		0.066 *** (3.719)
<i>Social factors</i>			
COMM		0.336 *** (19.508)	0.302 *** (16.978)
REPU		0.371 *** (20.344)	0.333 *** (17.727)
SPOC		0.377 *** (20.815)	0.336 *** (18.119)
<i>Control factors</i>			
AGE	-0.006 *** (6.417)	-0.007 *** (7.063)	-0.007 *** (6.745)
GENDER	0.114 *** (4.514)	0.116 *** (4.260)	0.110 *** (3.987)
HHINCOME	YES	YES	YES
POLVIEW	YES	YES	YES
COUNTRY	YES	YES	YES
Evaluation criteria			
McFadden's R ²	0.191	0.314	0.331
Observations correctly classified	71.4%	77.7%	78.4%
LR chi-squared	3179.398	5284.104	5503.990
BIC'	-2916.404	-5039.895	-5212.817

Notes: *** represents statistical significance at the 1% ($p < .01$) level. Absolute z-statistics are displayed in parentheses under the coefficient estimates.

While both economic and social factors are statistically significant, the magnitude of their effects is difficult to interpret. In order to ease interpretation, average marginal effects on the probability to support hosting the Olympics for a one unit change in the independent variables are reported for the overall model. For example, increasing the importance of avoiding costs to the taxpayers (TAX) by one unit while holding other variables constant, decreases, on average, the probability of being in support of hosting the Olympics by 2.9%.

Comparing average marginal effects in Table 2 reveals consistently higher average marginal effects for social than for economic variables. FIGURE 1 illustrates this finding. Based on the responses of our survey respondents, we therefore conclude that social factors have a stronger impact on citizens' support of hosting the Olympics than economic factors.

Figure 1 – Comparison of average marginal effects



2.4 Conclusion

Using survey data from 12,000 respondents across 12 countries, our results suggest that the *potential* economic impact of hosting the Olympics influences people's support. It therefore makes sense that pro-Olympics groups neglect the doubts of economists and frequently promise economic benefits to voters.

However, the empirical results indicate that social factors play a more important role than economic factors for people's support for hosting the Olympics. Interest groups in favor of hosting the Olympics could therefore benefit from rebalancing the focus of their campaigns from economic to social factors.

3 Paper II - Anticipated feelings and the support for public mega projects⁶

⁶ Streicher, T., Schmidt, S. L., Schreyer, D., & Torgler, B. (2017a). Anticipated feelings and the support for public mega projects. Unpublished working paper.

Abstract

When facing complex decisions, individuals often use a heuristic and rely on their affective feelings rather than systematically evaluating decisional pros and contras. If this heuristic misguides personal decisions, the consequences may be unfortunate for individuals but not harmful to the wider society. This is different when it comes to decisions with a public policy impact, such as the approval of public mega projects, which can result in inefficient government spending. Our study therefore examines the formation and interplay of cognitive vs. affective decision components in the context of public mega projects. Using population-representative survey data from 11 European countries and the USA, we provide evidence for three major findings: First, context-specific orientations play a more decisive role for individuals' affective feelings than their general orientations. Second, affective feelings exert a strong influence on the support for public mega projects. Third, while effortful processing filters the influence of affective feelings on decisions, the filtering mechanism is rather ineffective.

Keywords: Affective forecasting theory; dual process theory; feelings; heuristics; Olympic Games; public referenda

3.1 Introduction

A political brain is an emotional brain. It is not a dispassionate calculating machine, objectively searching for the right facts, figures, and policies to make a reasoned decision.

Drew Westen (2008, p. 15)

Both the recent presidential election in the United States and the Brexit referendum in the United Kingdom confronted voters with highly complex decisions whose potential consequences for immigration, trade, and foreign policy fell well outside the general citizenry's area of expertise. When facing such complex decisions, voters tend to find it easier and more efficient to rely on affect rather than systematically evaluating the decisional pros and contras (Slovic et al., 2002) or trusted representatives (Stadelmann & Torgler, 2013). This mental shortcut, known as the *affect heuristic* (c.f. Kahneman, 2003), implies that decisions, rather than occurring in the "emotional vacuum" (Elsbach & Barr, 1999, p. 191) implicitly assumed in the traditional decision-making literature, are in fact impacted by feelings. Yet despite numerous studies supporting this view (c.f. Isen, Shalke, Clark, & Karp, 1978; Johnson & Tversky, 1983; Loewenstein, 2000; Wright & Bower, 1992), it has been largely neglected in the extant literature until a recent re-emphasis in a growing body of economic research on the role of feelings in individual decision-making (c.f. Kahneman, 2012).

One prominent stream in this latter is affective forecasting research, which takes into account the *expected* feelings associated with a decision (Wilson & Gilbert, 2003). This paradigm postulates that as individuals face a range of decisions at varying intervals during the day – from eating out or staying home to buying a new car or booking a beach vacation to major life choices like remaining in a marriage – these decisions will be shaped by their own predictions of how different options will make them feel (Dunn & Laham, 2006).

When this use of affect results in misguided personal decisions, the results may be unfortunate for the individual but not necessarily harmful to the wider society. When it influences public policy decisions, however, such as the approval for public mega-projects, it may result in not only inefficient government spending but even the loss of lives (Sunstein, 2000). Yet despite a decade-old call by leading behavioral economists for further research on the formation of cognitive versus affective judgments (Loewenstein et al., 2001), there are still few empirically tested models that explain the interplay between the two. This important research area thus remains seriously understudied (Mikels et al., 2011, p. 751).

We aim to narrow this gap in behavioral economics research in three ways: by examining whether and to what extent affective forecasting influences decision-making on public mega-projects, by identifying the antecedents of affective forecasting in this context, and by assessing the extent to which cognitive judgment components regulate the impact of individual feelings on personal decisions. To achieve these goals, we employ the type of cross-country research setting recognized as an important condition for establishing generalizability. More specifically, we use a unique representative data set of 12,000 respondents from 11 European countries and the USA, whose diverse origins and backgrounds raise the key concern of equivalent cross-country comprehension and measurement of research constructs (Rutkowski & Svetina, 2014). To address this concern, we apply advanced invariance measurement methods to a common type of public mega-project, one recently proposed in all 12 participating nations, the hosting of the Olympic Games.

3.2 Theory development and hypotheses

For the conceptual foundation of our analysis in the context of public mega-projects, we draw on two theoretical paradigms: dual processing and affective forecasting.

3.2.1 Dual process theory

For decades, models postulating two distinct human cognitive processing systems have generated considerable interest in social, cognitive, and neuropsychology, as well as in related fields (Achtziger & Alós-Ferrer, 2013; Brocas & Carrillo, 2014; Kahneman, 2003, 2012; Smith & DeCoster, 2000; see, e.g., Strack & Deutsch, 2004). Although researchers use different names for these two systems – here denoted as *intuitive* versus *deliberate* – they largely agree on their characteristics. The *intuitive system* or system 1 typically works with little or no cognitive exertion, meaning that its operations are automatic, impulsive, fast, and based on association. The *deliberate system* or system 2, in contrast, requires cognitive effort to operate a reflective, slow, controlled, and rule-based process. In several dual process models, a primary function of the intuitive system is to generate both affective and non-affective feelings (Strack & Deutsch, 2004; Zajonc, 1980), which the deliberate system then checks for quality before steering them for correction through either one or both systems. According to Kahneman and Frederick (2002), however, such monitoring tends to be lax, leading to an unfiltered impact of the intuitive output on many judgments, which makes them prone to error. It is therefore important to understand this intuitive output – especially as it relates to affective feelings – as a major source of judgment error.

3.2.2 Affective forecasting theory

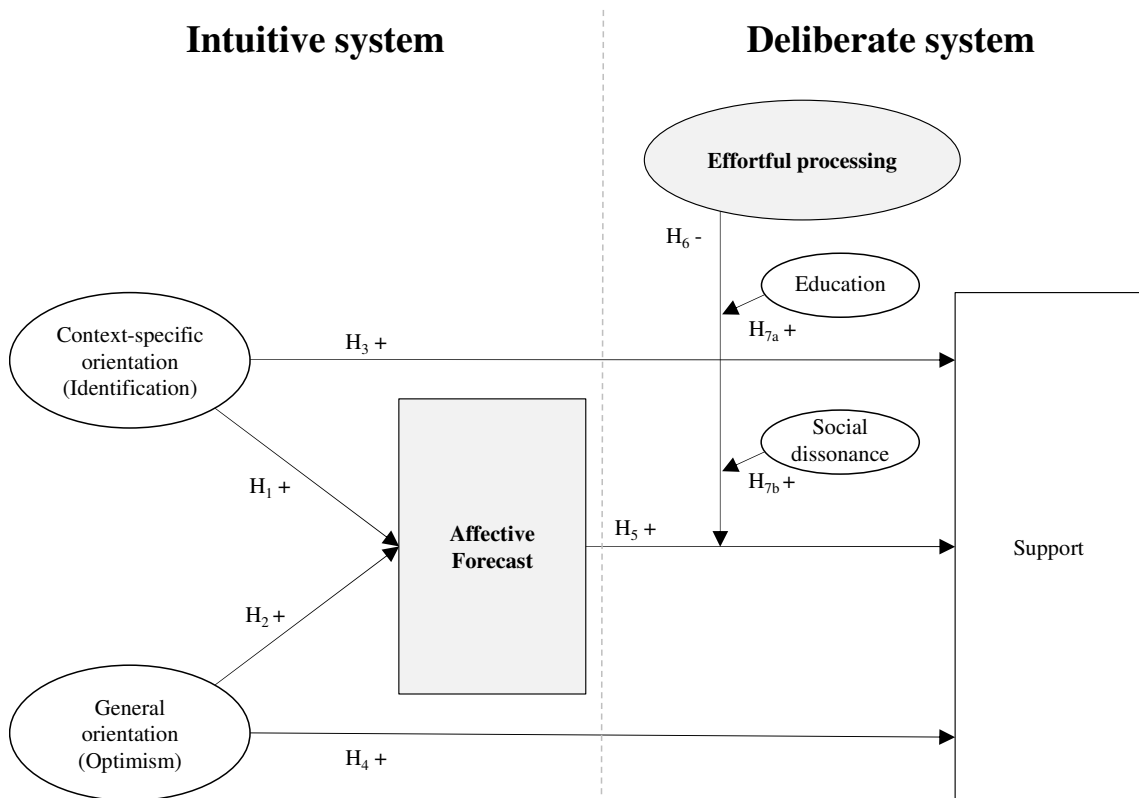
Although affective forecasting theory can advance our understanding of how affective feelings function in the context of decision-making, the affective forecasting literature to date centers on decisions having a predominantly individual impact, such as those on personal consumption (Ebert, Gilbert, & Wilson, 2009), marriage (Lucas, 2005) or medical testing (Rhodes & Strain, 2008). Such personal decisions, however, have nowhere near the importance for the wider society as decisions that influence projects in

the public domain. In the context of nuclear waste treatment site construction, for example, Slovic, Flynn, and Layman (1991) identify a strong discrepancy between expert risk assessments of the project and emotionally charged public opposition, which the experts considered irrational. Thus, finding sites for socially desirable facilities is a problem as political decision makers face local opposition due to the NIMBY (Not in My Backyard) problem (Frey, Oberholzer-Gee, & Eichenberger, 1996). In fact, Sunstein (2000), after summarizing several studies on other public mega projects, argues that such misguided judgments are costly in terms of both money and lives. Yet despite scholarly calls for research (e.g., Loewenstein et al., 2001), we are unaware of any coherent empirical model that can explain the interplay between intuitive and deliberate judgments in the context of public mega-projects.

3.2.3 Research model

To remedy this research deficit, we develop a dual process model (Figure 2) in which the individual decision to support the public mega-project of hosting the Olympic Games is based on an interplay between an intuitive and a deliberate system. More specifically, the model assumes that the *intuitive system* generates an output in the form of an affective forecast through an effortless associative link between two types of orientations, one context specific and the other general.

Figure 2 - Research model



As the context-specific orientation, we choose social identity theory (see for example Ashforth, Harrison, & Corley, 2008) for its ability to describe the relations between individuals' self-definitions and social groups and events. From this perspective, the more closely individuals associate themselves with something, the more likely they are to evaluate it positively (Gilovich, Kumar, & Jampol, 2015), leading Hekman, Steensma, Bigley, and Hereford (2009, p. 1327) to point to identifications with "orienting effects" that shape evaluations (p. 1327). This latter is echoed by Conroy, Becker, and Menges (2017), who argue that identification influences the evaluation of affective events. We hypothesize that this relation also holds for forward-looking evaluations in the form of affective forecasts:

H1: *Identification has a direct positive effect on affective forecasting.*

Beyond the context-specific orientation, psychologists have long argued that individuals adhere to general orientations, with one of the most prominent being an individual's life orientation, often encapsulated as optimism (Scheier & Carver, 1985). This general tendency to expect a favorable outcome (Scheier & Carver, 1985) potentially influences individual evaluations of future affective events. Thus, Lam, Buehler, McFarland, Ross, and Cheung (2005) argue that differences in affective forecasts, particularly between individuals from different cultural backgrounds, may simply reflect differences in optimism, as reflected by our second hypothesis:

H2: *Optimism has a direct positive effect on affective forecasting.*

One interesting question related to the above hypotheses is whether context-specific and general orientations only exert influence on individuals' affective forecasts or whether they also directly influence their decisions. For instance, Hekman et al. (2009) argue that identification as a context-specific orientation not only impacts a pure evaluation of an event but also guides related actions. Other authors (see for example Conroy et al., 2017, who use identification as a moderator) postulate a rather indirect role for context-specific and general orientations. We therefore formulate a third hypothesis to test for a direct influence of identification and optimism, representing a context-specific and general orientation, respectively:

H3: *Identification has a direct positive effect on support for hosting the Olympics.*

H4: *Optimism has a direct positive effect on support for hosting the Olympics.*

Admittedly, the above hypotheses, although able to shed light on the antecedents of affective forecasting, cannot identify its impact on public support for hosting the

Olympic Games (the mega-project under study). Nonetheless, recent studies provide clear evidence that affective forecasting does shape human decisions in general (Dunn & Laham, 2006), particularly those about future events (Ebert et al., 2009). Hence, drawing on these studies, we hypothesize that a positive affective forecast – that is, the expectation of a hedonic benefit – has a positive effect on the decision to support the project:

H5: *Affective forecasting has a direct positive effect on support for hosting the Olympics.*

In answer to Loewenstein et al.'s (2001) call for research, a major point of interest in our study is the interplay between the intuitive and deliberate cognitive systems, particularly how the latter regulates the impact of the affective forecast produced by the former. Despite Kahneman and Frederick's (2002) claim of lax regulation (i.e., little effortful processing), other studies suggest that effortful processing, triggered by the information's relevance for the individual, can reduce the decisional impact of the affective judgment components (Elsbach & Barr, 1999; Forgas, 1989). To test for this moderating role of effortful processing, we formulate the following hypothesis:

H6: *Effortful processing reduces the impact of affective forecasting on support for hosting the Olympics.*

If effortful processing can indeed induce corrective action on affective forecasting's impact, it would be worth understanding what influences the processing effectiveness. Among the several influencing factors discussed in the literature, the most frequently referenced are the ability to engage in extensive thought and exposure to statistical rule-based thinking (for a brief overview of influencing factors, see Kahneman, 2003, p. 711). Although presumably not perfectly correlated, we conjecture that education

should support the aforementioned ability and exposure, as expressed in the following hypothesis:

H7a: *Education strengthens the negative relation between effortful processing and the impact of affective forecasting.*

Because in our model, affective forecasting as a decision component is sensitive to social influence (Dane & George, 2014), we are also able to test the research claim that individual social contexts can greatly influence economic decisions (Mailath & Postlewaite, 2016). Given that humans strive for consistency through the deliberate cognitive system (Gawronski & Strack, 2004), we expect them to engage in less effective corrective actions through effortful processing when their affective forecast corresponds to their social environment. Conversely, we expect dissonance between individuals' affective forecasts and their environments to alert and motivate them to more effective corrective actions through effortful processing. We express this expectation in an additional moderation hypothesis:

H7b: *Social dissonance strengthens the negative relation between effortful processing and the impact of affective forecasting.*

3.3 Method

3.3.1 Data collection

We collected our data through a representative online survey carried out between March and April 2015 in 12 countries: Austria, France, Germany, Greece, Italy, Norway, Poland, Spain, Sweden, Switzerland, the United Kingdom, and the United States. Four criteria determined our country selection: (i) location in Europe or the U.S., (ii) definition as a democracy based on the Democracy Index 2013 (The Economist Intelligence Unit, 2014), (iii) recent aspirations to host the Olympic Games, and (iv) a

gross domestic product at purchasing power parity (see also Appendix 1). The English language questionnaire was translated and then back-translated into the respective languages of the selected countries by native speakers from the market research company Nielsen Sports,⁷ which also programmed local language versions of the online survey and recruited respondents in all countries. In total, 14,051 participants completed the questionnaire. Nielsen Sports excluded 753 participants because of uniform response styles and unreasonably rapid completion and dropped 1,298 more participants who completed the survey after representative quota targets for age, gender, country, and region had already been met. The resulting population-representative data set includes 12,000 valid responses across all 12 countries (1,000 per country).

3.3.2 Measures

We use four reflective latent variables (IDENT for identification, OPTI for optimism, DESI for a social desirability adjustment of OPTI and EFFORT for effortful processing) and two single-indicator variables (AFCST for affective forecast and SUPPORT for the support of the public mega-project) that were measured from well-established and widely cited instruments. In the following, we describe the measurement of these variables, as well as additional controls and moderators, followed by a confirmatory factor analysis (CFA) in the subsequent section:

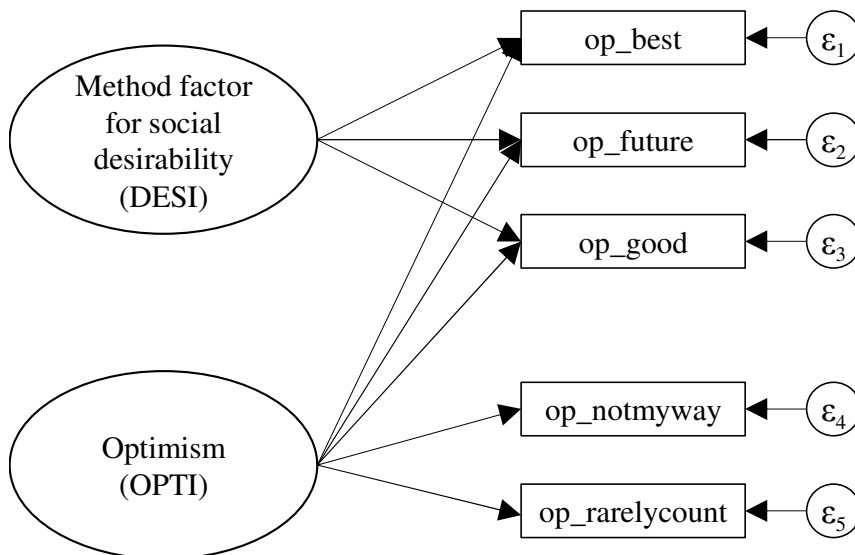
IDENT is a reflective latent variable that proxies an individual's identification with a hosting of the Olympics in his or her country. The survey questions for our indicators were adapted from Mael and Ashforth's (1992) well-established six-item identification construct and recorded on a 5-point Likert scale. According to a preliminary confirmatory factor analysis (CFA), there are common unobserved factors between two

⁷ Previously Repucom.

item pairs that focus on the extent to which individuals take the success or failure of hosting the Olympics in their country personally.⁸ We account for this commonality in our models by following Byrne's (2012) suggestion to correlate the error terms of these item pairs.

OPTI is also a reflective latent variable. It proxies an individual's general optimism based on the widely used Life Orientation Test-Revised (LOT-R) by Scheier, Carver, and Bridges (1994) with one of the six original items excluded because of a low factor loading in the preliminary CFA. To account for socially desirable responses (the tendency for individuals to present themselves as rather optimistic), we employ Rauch, Schweizer, and Moosbrugger's adjustment (2007) of the LOT-R and include the method factor DESI to additionally reflect the positively worded items of the original LOT-R. DESI can thus best be described as a nested latent variable of OPTI (see Figure 3).

Figure 3 - Measurement of optimism (based on Scheier et al., 1994) adjusted for social desirability (Rauch et al., 2007)



⁸ See Appendix 2 for the wording of the item pairs (1st pair: personal insult with personal embarrassment; 2nd pair: personal insult with personal compliment).

The last reflective latent variable, EFFORT, indicates a respondent's willingness to engage in the cognitively effortful process of considering four different types of information sources when making a decision: classical media, modern media, the campaigns of supporters, and the campaigns of opponents of hosting the Olympics. As in other well-cited survey-based studies assessing respondent consideration of different information sources (c.f. O'Reilly, 1982), we measure responses on a 5-point Likert scale ("strongly disagree" to "fully agree"). The preliminary CFA reveals yet another common unobserved factor for the classical/modern media item pair,⁹ to account for which we again correlate the error terms.

Our model also includes the indicator AFCST, which reflects the affective forecast of an individual with respect to hosting the Olympics. Given that self-reported measures of happiness are more reliable than alternative measures (Konow & Earley, 2008), we employ Bhattacharjee and Mogilner's (2014) measurement approach for target events and use a 5-point Likert scale ("strongly disagree" to "fully agree") to measure responses to the following statement: "Hosting the Olympic Games in [country] would make me happy." Although individuals may make imprecise estimates of the duration of their forecasted happiness, some recent literature (Carter & Gilovich, 2012; Wilson & Gilbert, 2003) suggests that they are able to accurately predict the happiness valence of a future event (i.e., whether it would make them happy or not), which is the relevant aspect of affective forecasting for our research question.

Our dependent variable is SUPPORT, which, as in several studies on public goods provision (Kahneman, Ritov, Jacowitz, & Grant, 1993; Streicher, Schmidt, Schreyer, & Torgler, 2017b), we measure by applying our 5-point Likert scale ("strongly disagree"

⁹ An analysis of additional variables in our survey points to a general resentment toward the media.

to “fully agree”) to responses to the following statement: “I am in support of hosting the Olympic Games in [country].”

In addition to the above indicators, we include two variables that test for a moderating effect on the relation between AFCST and EFFORT. The first, EDU, is a categorical variable measuring each respondent’s highest level of formal education from one (low) to three (high). The second variable, SDIS, measures social dissonance as the absolute value of the difference between respondents’ own individual support for hosting the Olympics and their expectations that friends and acquaintances will do the same. Lastly, we include several control variables to account for possible associations between AFCST or SUPPORT and age, gender, household net income, and political views.

3.3.3 Invariance of measures across countries

Although cross-country research is an important component in establishing generalizability, a key concern when using surveys is “measurement invariance,” the equivalent comprehension and measurement of constructs across countries.¹⁰ For example, without proof of measurement invariance, it is unclear whether differences in scale means stem from biases in how participants from different countries respond to the scale items or from actual differences in the underlying constructs (Steenkamp & Baumgartner, 1998). In our analysis, we avoid the pitfall of “comparing apples and oranges” (Jilke, Meuleman, & van de Walle, 2015, p. 37) by applying Jöreskog’s (1971) technique of multi-group confirmatory factor analysis (MG-CFA), which predominates in cross-country research (Jilke et al., 2015). More specifically, we conduct a stepwise, hierarchically ordered test of three commonly differentiated forms of measurement invariance: configural, metric, and scalar (Rutkowski & Svetina, 2014; Steenkamp &

¹⁰ See Rutkowski and Svetina (2014) and Vieider et al. (2016) for measurement invariance considerations in large-scale survey administration.

Baumgartner, 1998). The results are summarized in Table 3 and will be explained in the following.

Table 3 - Cross-country measurement invariance tests

	(1) Configural invariance model	(2) Full metric invariance model	(3) Partial metric invariance model	(4) Full scalar invariance model	(5) Partial scalar invariance model
Fit					
χ^2	2144.708	3038.130	2905.321	5561.257	3561.521
df	948	1135	1133	1254	1228
χ^2/df	2.262	2.677	2.564	4.435	2.900
RMSEA	0.036	0.041	0.040	0.059	0.044
CFI	0.980	0.969	0.971	0.929	0.962
SRMR	0.033	0.056	0.055	0.064	0.057
Measurement					
Model comparison	-	(2) vs. (1)	(3) vs. (1)	(4) vs. (3)	(5) vs. (3)
Δ CFI	-	0.011	0.009	0.042	0.009
Decision	Model	Model rejected	Model accepted	Model rejected	Model accepted
Freely estimated loadings/intercepts					
Identification					
id_insult	all/all	-/all	-/all	-/-	-/POL, USA
id_interest	all/all	-/all	-/all	-/-	-/NOR, SWE,
id_weour	all/all	-/all	-/all	-/-	-/AT, IT, POL,
id_success	all/all	-/all	-/all	-/-	-/-
id_compli	all/all	-/all	-/all	-/-	-/-
id_embarassm	all/all	-/all	-/all	-/-	-/ESP, FRA, IT
Optimism (OPTI)					
op_best	all/all	-/all	-/all	-/-	-/IT
op_future	all/all	-/all	-/all	-/-	-/POL
op_good	all/all	-/all	-/all	-/-	-/ESP, NOR
op_notmyway	all/all	-/all	UK, USA/all	UK, USA/-	UK, USA/UK,
op_rarelycount	all/all	-/all	-/all	-/-	-/GRE
Optimism desirability					
op_best	all/all	-/all	-/all	-/-	-/IT
op_future	all/all	-/all	-/all	-/-	-/POL
op_good	all/all	-/all	-/all	-/-	-/ESP, NOR
Effortful processing					
ef_classic	all/all	-/all	-/all	-/-	-/CH, GRE
ef_modern	all/all	-/all	-/all	-/-	-/ESP
ef_supporters	all/all	-/all	-/all	-/-	-/POL
ef_opponents	all/all	-/all	-/all	-/-	-/GRE, POL

Note: Country abbreviations: AT = Austria, CH = Switzerland, ESP = Spain, FRA = France, GER = Germany, GRE = Greece, IT = Italy, NOR = Norway, POL = Poland, SWE = Sweden, UK = United Kingdom and USA = United States of America.

Configural invariance refers to a condition in which factor loadings that are salient (non-zero) or non-salient (zero or close to zero) in one country exhibit the same pattern in another country (Steenkamp & Baumgartner, 1998). To test for configural invariance, we first estimate separate CFA models for each country and then compute a MG-CFA model across all countries before examining the factor loadings. Even though χ^2/df values have the reputation of being inflated in large sample sizes like ours (see for example, Barrett, 2007; Meade, Johnson, & Braddy, 2008)¹¹, in this analysis, they are below or within the recommended cutoff values of three to five (Kline, 2005; Wheaton, Muthén, Alwin, & Summers, 1977), indicating that both the CFA models and the MG-CFA model are an excellent fit for the data (see Appendix 3a). Likewise, RMSEA and SRMR are well below the recommended cutoff values of 0.06 and 0.08, respectively, while CFI is above the 0.95 threshold recommended by Hu and Bentler (1999). Most important, all factor loadings are significant and exhibit the same pattern across all national samples (see Appendix 3b), indicating configural invariance across all 12 countries.

Metric invariance requires that scale intervals be equal across all national samples so that, for example, a one-unit change on a scale is equally meaningful for all countries (Jilke et al., 2015). The strictest form of metric invariance, full metric invariance, is tested by checking whether a configural invariance model with freely estimated loadings for all national samples has a significantly better overall fit than a full metric invariance model that constrains all factor loadings to be equal across all countries. The estimation results (see Table 3) indicate that the full metric invariance model fits the data well, with values for RMSEA (0.041), CFI (0.969), and SRMR (0.056) that fulfill

¹¹ Such inflation occurs because the χ^2 fit statistic is calculated by multiplying the sample size minus one by the minimum fitting function (Hu & Bentler, 1999, p. 2).

Hu and Bentler's (1999) recommendations. Nevertheless, rather than relying only on these individual fit statistics and accepting the model, we follow a conservative approach and also analyze ΔCFI values as suggested in the measurement invariance literature (Cheung & Rensvold, 2002; Meade, Johnson, & Braddy, 2008; Milfont & Fischer, 2010). Because our ΔCFI (0.011) is slightly above the commonly recommended cutoff value of 0.010 (Cheung & Rensvold, 2002; Milfont & Fischer, 2010), we reject the hypothesis of full metric invariance for our model.

Having rejected full variance, we then test for partial metric invariance by successively identifying and relaxing constraints on loadings with the largest modification indices until a model is identified whose data fit is statistically no worse than that of the configural invariance model (Steenkamp & Baumgartner, 1998). According to this analysis, respondents from an Anglo-American cultural background (UK and USA) differ strongly from respondents in the other countries with respect to how their optimism is reflected by one item from the optimism construct. We thus allow this loading on OPTI to be freely estimated for the USA and UK in a model denoted as partial metric invariance model (3) in Table 3. This latter produces both strong fit statistics and a ΔCFI (0.009) below the recommended cutoff value, supporting partial metric invariance across the 12 countries.

The final invariance type, *scalar invariance*, implies cross-country equivalence of the model item intercepts and thus allows cross-country comparison of the latent variable means (Jilke et al., 2015). The strictest form of scalar invariance, full scalar invariance, is tested by constraining all item intercepts in a model to be the same across all countries (full scalar invariance model (4) in Table 3) and then comparing the fit statistics to those from a less restrictive model (partial metric invariance model (3) in Table 3). As Table 3 shows, the restricted model performs significantly worse, with a ΔCFI (0.042) well

above the recommended cutoff value of 0.010. We therefore reject the hypothesis of full scalar invariance and move on to a test of partial scalar invariance. Here again, we follow Steenkamp and Baumgartner (1998) by allowing about 9% (26) of the (300) intercepts to be freely estimated across countries (partial scalar invariance model (5) in Table 3). This model fits the data well, with RMSEA (0.044), CFI (0.962), and SRMR (0.057) values well in line with Hu and Bentler's (1999) suggestions. Given that Δ CFI (0.009) also falls below the previously discussed cutoff value, we conclude partial scalar invariance across all 12 countries.

3.3.4 Reliability and validity of measurement scales

To further validate our measurement instruments, we also conduct tests of reliability and discriminant validity (see bottom of Appendix 3a). For the overall model, both the average variance extracted (AVE) and the composite reliability (CR) for IDEN (0.561 and 0.883), OPTI (0.689 and 0.914), DESI (0.666 and 0.856), and EFFORT (0.504 and 0.800) are above the recommended thresholds of 0.5 (Fornell & Larcker, 1981) and 0.7 (Bagozzi & Yi, 2012), respectively. On an individual country level, with the exception of the AVE for the latent variable EFFORT, which is slightly below 0.5 in six countries, all AVEs and CRs are above the recommended levels, indicating that our measurement instruments are reliable. A Fornell-Larcker test (Fornell & Larcker, 1981) then provides additional evidence that all non-nested latent variables in our model exhibit discriminant validity.

3.4 Results

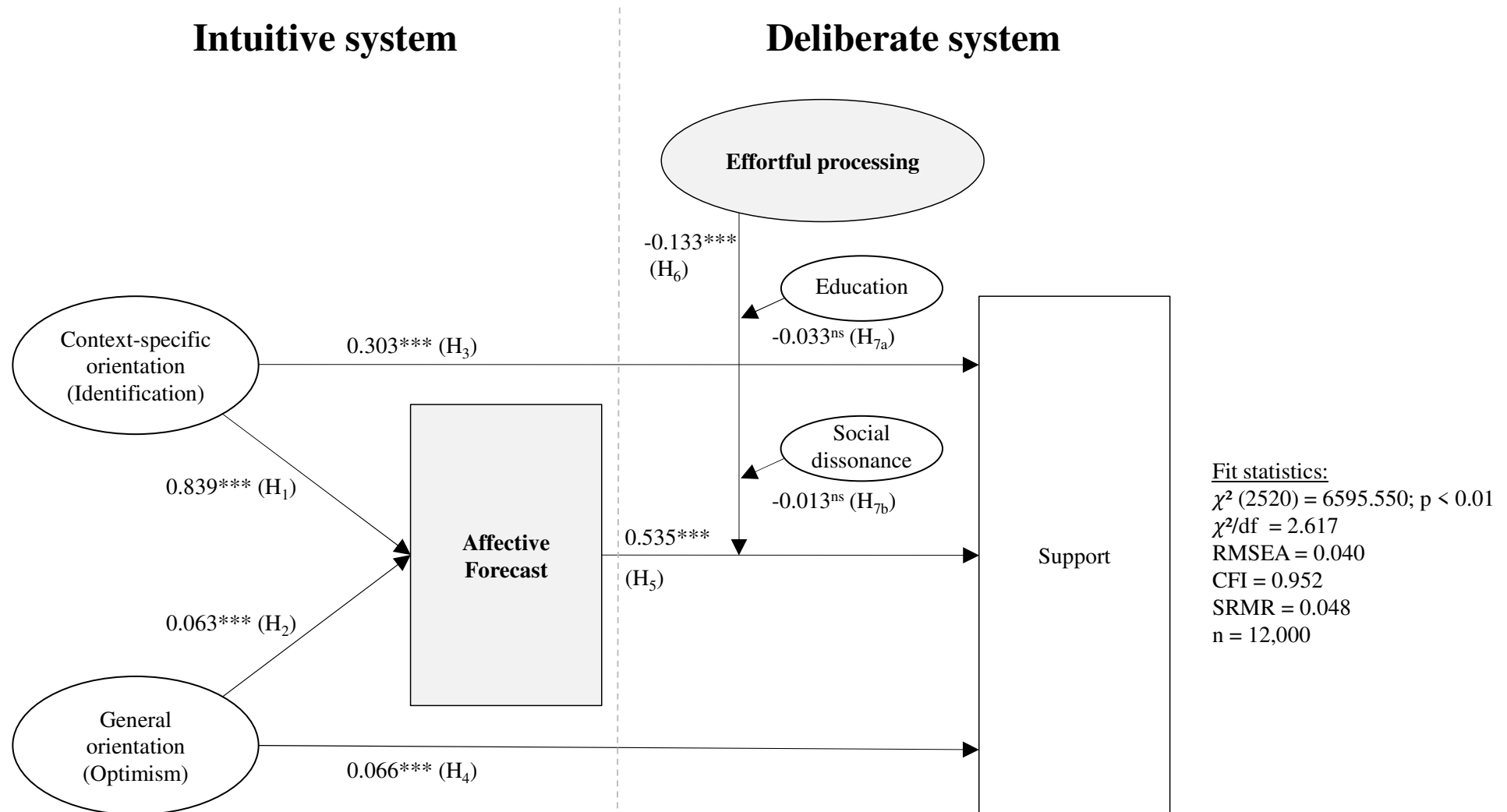
3.4.1 Overall model fit

Using Mplus software and adapting Sardeshmukh and Vandenberg's (2016) code on moderated-mediation for latent variable interactions, we estimate structural equation

models for each of the 12 countries individually and then run estimations for our overall cross-country model. Because many traditional model fit indices are not valid for latent variable interaction models and thus not reported by the statistical software, we assess the fit of the overall model using the two-step procedure suggested by Sardeshmukh and Vandenberg (2016). Specifically, we first estimate baseline models that do not involve latent variable interactions, allowing us to check traditional goodness-of-fit indices, and then estimate models that do include latent variable interactions, which we compare with the corresponding baseline models using the Akaike Information Criterion (AIC).

As Figure 4 and Table 4 show, our models fit the data very well both for each individual country and across all countries in the overall model. For example, the baseline versus interaction fit statistics for the overall model ($\chi^2/df = 2.617$, RMSEA = 0.040, CFI = 0.952, and SRMR = 0.048) fulfill currently recommended thresholds and cutoff values. Of particular interest, the baseline versus interaction comparison of AIC values in this model (AIC baseline model = 513157.744 vs. AIC interaction model = 513009.384) reveals that including latent interactions significantly reduces information loss, making the latent variable interaction model superior to the baseline model. In fact, this superiority holds in 10 out of the 12 individual countries, applying to all except Italy and Greece. Even for these two countries, the AIC differences are relatively small, especially given that AIC punishes for model complexity, which is naturally higher in the latent interaction model than in the baseline model. We therefore feel confident in continuing to include these two countries in our latent interaction models while being cautious in interpreting latent variable interactions for them on an individual country level.

Figure 4 - Full structural equation model (overall model)



Note: *** p < 0.001, ** p < 0.01, * p < 0.05, ns= not significant. Based on pooled sample across all countries.

Table 4 - SEM results: Model fit and structural path coefficients

	(1) AT	(2) CH	(3) ESP	(4) FRA	(5) GER	(6) GRE	(7) IT	(8) NOR	(9) POL	(10) SWE	(11) UK	(12) USA	(13) Overall ¹
Fit of baseline model													
χ^2	526.628	517.488	515.386	492.867	608.210	429.477	493.552	454.939	576.553	663.051	608.774	700.389	6595.550
df	210	210	210	210	210	210	210	210	210	210	210	210	2520
χ^2/df	2.508	2.464	2.454	2.347	2.896	2.045	2.350	2.166	2.745	3.157	2.899	3.335	2.617
RMSEA	0.039	0.038	0.038	0.037	0.044	0.032	0.037	0.034	0.042	0.046	0.044	0.048	0.040
CFI	0.952	0.951	0.958	0.958	0.938	0.968	0.966	0.964	0.939	0.928	0.954	0.939	0.952
SRMR	0.045	0.043	0.049	0.044	0.048	0.037	0.048	0.044	0.047	0.058	0.050	0.061	0.048
Fit comparison between baseline and latent interaction model													
AIC baseline model	43311.572	43350.838	41938.204	43339.044	42026.700	44291.710	40299.047	39928.188	42744.601	42592.956	40226.967	40535.388	513157.74
AIC interaction model	43307.864	43338.546	41894.352	43336.622	42016.933	44313.855	40307.336	39926.564	42738.736	42578.957	40192.820	40497.867	513009.38
Superiority of interaction model (AIC _{baseline} > AIC _{interaction})	✓	✓	✓	✓	✓	-	-	✓	✓	✓	✓	✓	✓
Structural path coefficients of latent interaction model													
IDENT -> AFCST (H ₁)	0.832***	0.815***	0.860***	0.717***	0.818***	0.793***	0.799***	0.816***	0.767***	0.785***	0.819***	0.809***	0.839***
OPTI -> AFCST (H ₂)	0.086*	0.047	0.108**	0.171***	0.100**	0.082*	0.049	0.045	0.005	0.075*	0.092**	0.054†	0.063***
IDENT -> SUPPORT (H ₃)	0.395***	0.353***	0.431***	0.258***	0.327***	0.297***	0.296***	0.333***	0.516***	0.257***	0.164**	0.167**	0.303***
OPTI -> SUPPORT (H ₄)	0.139***	0.071†	0.108**	0.093**	0.111**	0.111**	0.042	0.060	0.015	0.080*	0.035	0.025	0.066***
AFCST -> SUPPORT (H ₅)	0.511***	0.530***	0.372***	0.575***	0.520***	0.710***	0.525***	0.570***	0.336***	0.474***	0.529***	0.473***	0.535***
AFCST/EFFORT -> SUPPORT (H ₆)	-0.195**	-0.015	-0.235**	-0.143*	-0.143*	-0.064	-0.099**	-0.152*	-0.131†	-0.169**	-0.119*	-0.069	-0.133***
EDU/AFCST/EFFORT -> SUPPORT (H _{7a})	0.090	-0.202*	-0.097	0.071	0.051	-0.042	0.008	0.025	-0.041	0.054	-0.019	-0.049	-0.033
SDIS/AFCST/EFFORT -> SUPPORT (H _{7b})	0.079	-0.053	0.115	-0.003	-0.116	0.025	0.019	-0.023	0.002	-0.082	-0.187**	-0.184*	-0.013

Notes: Robust standard errors and chi-square statistics are estimated using the Satorra-Bentler procedure (Satorra & Bentler, 1994). Country abbreviations: AT = Austria, CH = Switzerland, ESP = Spain, FRA = France, GER = Germany, GRE = Greece, IT = Italy, NOR = Norway, POL = Poland, SWE = Sweden, UK = United Kingdom, and USA = United States of America. *** $p < .001$, ** $p < .01$, * $p < .05$, † $p < .1$.

¹For the overall model (13), the AICs for both the baseline and the interaction model are based on a pooled sample ($n = 12,000$) across all countries because a multi-group option for LMS is not (yet) implemented in MPlus or (to the best of our knowledge) any other statistical software.

3.4.2 Antecedents and impact of affective forecasting on support

As Table 4 further illustrates, both across all 12 of our representative country samples and within our pooled sample, identification has a significant positive effect on affective forecasting at the 0.1% level, providing strong support for H1. With respect to H2, we find that optimism has a direct positive effect (significant at a minimum 10% level) in 8 out of the 12 countries (excluding Switzerland, Italy, Norway, and Poland), indicating that optimism's direct positive effect is not unanimous. Nonetheless, given that the overall model exhibits a statistically significant effect at the 0.1% level, we conclude that general orientations like optimism may potentially impact affective forecasting but in a way that is highly country specific. Moreover, comparing the coefficients of optimism versus identification on affective forecasting suggests that context-specific orientations may have a stronger impact than general orientations.

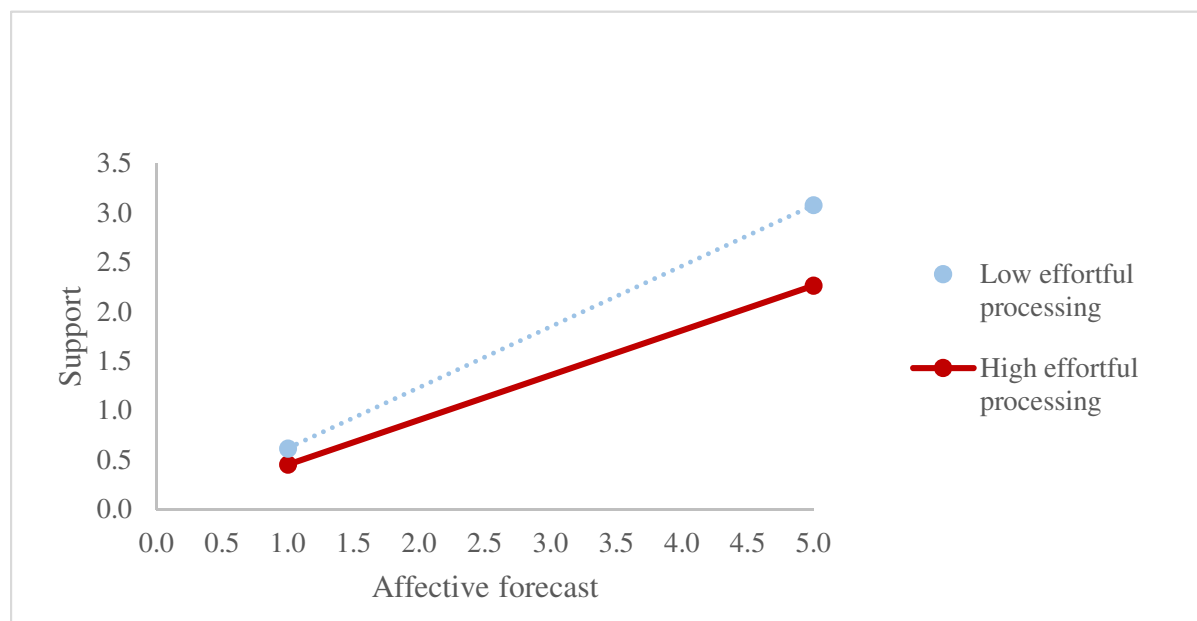
We find a similar pattern for the direct impact of context-specific and general orientations on support (H3 and H4): both across all 12 countries and in the overall model, identification has a statistically significant direct positive effect on support decisions at the 0.1% level. Optimism, in contrast, has lower significance levels in 7 out of 12 countries, as well as in the overall model. Combined with our findings for H1 and H2, these observations suggest that whereas context-specific and general orientations can have both an indirect effect (through affective forecasting) and a direct effect on support decisions; in the context of public mega-projects, context-specific orientations seemingly play a more decisive role in shaping support decisions.

Lastly, in addition to our hypotheses on the impact of affective forecasting's antecedents, we also conjecture that affective forecasting itself has a direct positive influence on support decisions (H5). The supportive evidence for this hypothesis is strong: both across all countries and in the overall model, affective forecasting has a statistically significant direct effect on support at the 0.1% level.

3.4.3 Moderating role of effortful processing

We find similarly strong supportive evidence that effortful processing reduces affective forecasting's impact on the support decision (H6), a conjecture based on Kahneman and Frederick's (2002) claim that the deliberate system regulates intuitive system output. In fact, this hypothesized effect is statistically significant at a minimum 10% level in 9 out of the 12 countries and at the 0.1% level in the overall model across all countries. We particularly note that the impact of affective forecasting on support is higher at low levels of effortful processing than at high levels (see Figure 5), which suggests that low effortful processing leads to a more unfiltered impact of an individual's expected feelings on subsequent decisions. This finding supports the complementary role of the deliberate system for the intuitive system postulated by many prominent dual processing scholars.

Figure 5 - Moderating role of effortful processing on affective forecasting



3.4.4 Education and social dissonance

Finally, given the finding that effortful processing can lead to corrective action on affective forecasting's impact on individual decisions, it is worth exploring which factors influence the effectiveness of the processing itself. In fact we find little evidence of a moderating

effect of either education (H7a) or social dissonance (H7b) on the relation between effortful processing and the impact of affective forecasting. Only in two cases (Switzerland for education and the UK for social dissonance) do we find a statistically significant interaction at the 5% level. Given no corresponding significant interaction for the overall model across all countries, we attribute these two exceptions to country-specific factors rather than generally prevailing mental mechanisms, and thus reject both hypotheses.

3.5 Discussion

To advance the understanding of how expected feelings in the form of affective forecasts shape individual decisions about public mega-projects, we integrate affective forecasting and dual process theory to conceptualize expected feelings as an output of the intuitive cognitive system, whose impact on decisions is later filtered by the deliberate cognitive system. By applying this framework to data from a large-scale, representative survey across 12 countries, we provide evidence for the crucial role of expected feelings in the dual process of human reasoning, pinpointing identification as an important context-specific antecedent of expected feelings. We further show that the impact of expected feelings on our decisions is moderated by the level of effortful processing. Our research model and empirical findings thus throw light on how the general citizenry makes decisions on public mega-projects, a phenomenon difficult to understand from a purely classicist economic view of rational decision-making.

3.5.1 Contributions of our study

One major contribution of our study is that it broadens the traditional affective forecasting focus on decisions that primarily impact the decision maker. These personal decisions, even when misguided by feelings rather than shaped by effortful information processing, have little impact for society. Such misguided choices in the context of today's frequent public

referenda (Casella & Gelman, 2008), in contrast, can cost billions of dollars annually and even risk thousands of lives (Sunstein, 2000). Hence, by extending affective forecasting theory to the context of public mega-projects and providing novel insights into its antecedents, we provide a lens through which both researchers and policy makers can better analyze past decisions and prepare for upcoming referenda.

Another contribution is our integration of affective forecasting and dual processing theory to build a novel theoretical framework in which to examine the interplay between the intuitive and deliberate systems of human reasoning. In doing so, we address long unanswered calls for such research by renowned scholars like Loewenstein et al. (2001) and Mikels et al. (2011). We also address the dearth of research operationalizing the claim that in cognitive processing, a deliberate system regulates an intuitive system (Kahneman and Frederick, 2002). We use our theoretical models to operationalize the deliberate system's regulatory intervention as effortful processing that moderates the impact of expected feelings on decisions.

As one of the largest empirical studies of decision-making (12 countries on two continents), particularly with respect to affective forecasting and dual process theory, our analysis makes a valuable contribution to the generalizability of past cross-country findings. We recognize that experimental costs have forced many past studies to rely on small convenience samples. These studies have provided the causal foundations of our research model and we are delighted to build upon them and contribute to their generalizability.

3.5.2 Limitations and future research directions

A frequent criticism of affective forecasting research is that it studies extreme target events that the public majority clearly perceives as either negative or positive, whereas in reality an event may also be neutral (Christophe & Hansenne, 2016). We have therefore chosen to

focus on the public mega-project of hosting the Olympic Games, not only because the event is well known across all the countries surveyed but also because it evokes a broad range of feelings from excitement to apathy to fierce rejection. Nevertheless, we admit that hosting the Olympics is a highly specific mega-project implying a need for future research to replicate and extend our work to both extreme and neutral events that are less specific while still well understood internationally.

Another limitation is our focus on happiness as the expected feeling, chosen not only because it is among the most widely researched feelings in economics (see for example Frey & Stutzer, 2002) but because affective forecasting theory centers on happiness forecasts. In fact, recent studies in the related field of emotions provide evidence that different types of emotions affect individuals' intentions differently (Conroy et al., 2017), implying that different expected feelings could have different impacts on decisions and the extent to which they are regulated by the deliberate cognitive system. We consider these questions highly promising for future research.

A related limitation is our use of a self-reported, single-item measure for affective forecasting, which, although in line with previous research in related fields (see e.g., Bhattacharjee & Mogilner, 2014), is both narrowly focused and subject to possible self-reporting bias. However, some studies do find such a measure to be reliable (Daly & Wilson, 2016; Konow & Earley, 2008), and recent work suggests that individuals can accurately predict whether a future event will make them happy or not (Carter & Gilovich, 2012; Wilson & Gilbert, 2003). Nonetheless, we would welcome future research that develops and tests multi-item affective forecasting measures for use in our discipline.

Finally, our analyses reveal no statistically significant moderating effect of education or social dissonance on the relation between effortful processing and individual decisions.

Given the centrality of effortful processing or, more generally, regulatory mechanisms in dual process models (see for example Kahneman & Frederick, 2002), we hope that future research will shed light on exactly which factors influence the effectiveness of regulatory interventions in decision-making. To lay a foundation for such inquiry, we have eschewed the implicit traditional assumptions of human decision-making in an “emotional vacuum” (Elsbach & Barr, 1999, p. 191) to provide evidence that decisions impacting public policy can rather be a “dance of affect and reason” (Slovic et al., 2002, p. 332) in which affect dictates the rhythm.

Appendix 1: Country selection based on four criteria

Country	(1) Region	(2) Democracy index ≥ 6.0 ¹	(3) Application for/ hosting of Olympics since 1994	(4) GDP ²	<i>n</i>
United States	North America	8.11	Yes	16,720,000,000,00	1,000
Germany	Europe	8.31	Yes	3,227,000,000,000	1,000
United Kingdom	Europe	8.31	Yes	2,387,000,000,000	1,000
France	Europe	7.92	Yes	2,276,000,000,000	1,000
Italy	Europe	7.85	Yes	1,805,000,000,000	1,000
Spain	Europe	8.02	Yes	1,389,000,000,000	1,000
Poland	Europe	7.12	Yes	814,000,000,000	1,000
Sweden	Europe	9.73	Yes	393,800,000,000	1,000
Switzerland	Europe	9.09	Yes	371,200,000,000	1,000
Austria	Europe	8.48	Yes	361,000,000,000	1,000
Norway	Europe	9.93	Yes	282,200,000,000	1,000
Greece	Europe	7.65	Yes	267,100,000,000	1,000

Note: Countries are ordered by GDP to proxy the welfare loss potential from suboptimal decisions on public mega-projects.

¹According to The Economist Intelligence Unit (2014), a democracy index ≥ 6.0 denotes a democratic society as compared to hybrid regimes (4.0 to 5.9) and authoritarian regimes (<4.0).

²Gross domestic product in purchasing power parity in US dollars for 2015.

Appendix 2: Measurement of variables

Variable	Description and response format	Reference for wording and scale choice
Endogenous variables		
Support	'I am in support of hosting the Olympic Games in [country].' (1 'strongly disagree', 2 'disagree', 3 'neither/nor', 4 'agree', 5 'strongly agree')	Draws on prominent studies on the provision of public goods (cf. Kahneman, Ritov, Jacowitz, and Grant, 1993)
Affective forecast	'Hosting the Olympic Games in [country] would make me happier.' (1 'strongly disagree', 2 'disagree', 3 'neither/nor', 4 'agree', 5 'strongly agree')	Draws on the measurement approach for target events by Bhattacharjee and Mogilner (2014)
Exogenous variables		
Identification	'If someone criticizes [country] as host of the Olympic Games, it would feel like a personal insult.' 'I am very interested in other people's opinion about [country] as host of the Olympic Games.' 'When I talk about hosting the Olympic Games in [country] I would rather say 'our' Olympic Games instead of 'the' Olympic Games.' 'A successful hosting of the Olympic Games in [country] would feel like a personal success.' 'If someone praises [country] as host of the Olympic Games, it would feel like a personal compliment.' 'If a story in the media criticizes the organization of the Olympic Games in [country], I would feel embarrassed.' (1 'strongly disagree', 2 'disagree', 3 'neither/nor', 4 'agree', 5 'strongly agree')	Adapted from the well-established six-item identification construct by Mael and Ashforth (1992)
Optimism	'In uncertain times, I usually expect the best.' 'It's easy for me to relax.' (filler item) 'If something can go wrong for me, it will.' 'I'm always optimistic about my future.' 'I enjoy my friends a lot.' (filler item) 'It's important for me to keep busy.' (filler item) 'I hardly ever expect things to go my way.' 'I don't get upset too easily.' (filler item) 'I rarely count on good things happening to me.' 'Overall, I expect more good things to happen to me than bad.'	Adapted from the widely used Life Orientation Test-Revised (LOT-R) by Scheier, Carver, and Bridges (1994)
Effortful processing	'My opinion about hosting the Olympic Games in the USA is influenced by...' '...reports in "classical" media (TV, radio, print).' '...news / reports in modern internet media (Facebook, Twitter, etc.).' '...the campaigns of the supporters of the Olympic Games in [country].'	See, for example, O'Reilly, (1982) for the use of a 5-point Likert scale to consider different information sources
Education	'What is the highest educational level that you have attained?' Response options differ between the countries based on the different educational systems in each country. Responses were transformed into a low, medium and high format.	Country-specific degree names were provided by the market research company Nielsen sports
Social dissonance	Measured as the absolute value of the difference between a respondent's own support (see above) and his expectation of his friends and acquaintances' support for hosting the Olympics: 'The majority of my friends and acquaintances think that hosting the Olympic Games in the USA is a good idea and they would support it.' (1 'strongly disagree', 2 'disagree', 3 'neither/nor', 4 'agree', 5 'strongly agree')	-

Appendix 3a: CFA results: Fit, reliability and discriminant validity

Fit, reliability and discriminant validity	AT	CH	ESP	FRA	GER	GRE	IT	NOR	POL	SWE	UK	USA	Overall ²
Fit													
χ^2	151.564	164.991	154.234	156.053	169.160	165.410	210.075	121.520	246.566	177.767	183.286	242.581	2144.708
df	79	79	79	79	79	79	79	79	79	79	79	79	948
χ^2/df	1.919	2.088	1.952	1.975	2.141	2.094	2.659	1.538	3.121	2.250	2.320	3.071	2.262
RMSEA	0.030	0.033	0.031	0.031	0.034	0.033	0.041	0.023	0.046	0.035	0.036	0.046	0.036
CFI	0.984	0.980	0.985	0.984	0.980	0.983	0.979	0.991	0.960	0.977	0.983	0.973	0.980
SRMR	0.029	0.035	0.031	0.030	0.032	0.033	0.034	0.024	0.043	0.034	0.031	0.036	0.033
Reliability													
Avg. variance extracted (AVE)													
IDEN	0.506	0.516	0.582	0.532	0.539	0.514	0.577	0.577	0.509	0.505	0.595	0.543	0.561
OPTI	0.702	0.645	0.701	0.677	0.656	0.693	0.724	0.761	0.721	0.713	0.731	0.659	0.689
DESI	0.646	0.622	0.690	0.646	0.640	0.637	0.772	0.729	0.736	0.687	0.684	0.663	0.666
EFFORT	0.445	0.427	0.476	0.496	0.436	0.509	0.629	0.520	0.430	0.558	0.567	0.565	0.504
Composite reliability (CR)													
IDEN	0.858	0.862	0.891	0.870	0.874	0.860	0.888	0.890	0.859	0.858	0.897	0.875	0.883
OPTI	0.919	0.898	0.917	0.909	0.901	0.914	0.927	0.937	0.920	0.921	0.929	0.905	0.914
DESI	0.843	0.827	0.868	0.844	0.840	0.838	0.910	0.889	0.890	0.866	0.866	0.854	0.856
EFFORT	0.756	0.739	0.775	0.793	0.752	0.803	0.870	0.811	0.744	0.834	0.839	0.838	0.800
Discriminant validity¹													
Fornell-Larcker test (AVE > Correlation ²)													
IDEN vs. OPTI	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
IDEN vs. DESI	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
IDEN vs. EFFORT	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
OPTI vs. EFFORT	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
DESI vs. EFFORT	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Note: Robust standard errors and chi-square statistics are estimated using the Satorra-Bentler procedure (Satorra & Bentler, 1994). Country abbreviations: AT = Austria, CH = Switzerland, ESP = Spain, FRA = France, GER = Germany, GRE = Greece, IT = Italy, NOR = Norway, POL = Poland, SWE = Sweden, UK = United Kingdom and USA = United States of America.

¹We perform no Fornell-Larcker test of DESI versus OPTI, because by definition, all DESI items are nested in OPTI (Rauch et al., 2007).

²For the overall model (13), reliability and discriminant validity values/tests are based on a pooled sample ($n = 12,000$) across all countries.

Appendix 3b: CFA results: Latent variable loadings and covariances

Latent variable loadings and covariances	AT	CH	ESP	FRA	GER	GRE	IT	NOR	POL	SWE	UK	USA
Identification (IDEN)												
id_insult	0.730***	0.744***	0.804***	0.776***	0.740***	0.739***	0.793***	0.780***	0.643***	0.682***	0.775***	0.705***
id_interest	0.548***	0.513***	0.547***	0.496***	0.588***	0.563***	0.541***	0.659***	0.628***	0.638***	0.686***	0.670***
id_weour	0.681***	0.677***	0.728***	0.683***	0.714***	0.578***	0.690***	0.714***	0.723***	0.630***	0.697***	0.668***
id_success	0.783***	0.818***	0.854***	0.839***	0.846***	0.850***	0.855***	0.867***	0.840***	0.808***	0.888***	0.862***
id_compli	0.821***	0.835***	0.867***	0.814***	0.841***	0.856***	0.869***	0.844***	0.813***	0.814***	0.869***	0.841***
id_embarassm	0.687***	0.673***	0.717***	0.725***	0.653***	0.633***	0.707***	0.670***	0.586***	0.666***	0.667***	0.645***
Optimism (OPTI)												
op_best	1.034***	1.056***	1.082***	1.051***	1.108***	1.025***	0.989***	1.405***	1.000***	1.086***	0.991***	0.760***
op_future	1.397***	1.269***	1.511***	1.234***	1.367***	1.467***	1.241***	1.656***	1.659***	1.460***	1.225***	0.847***
op_good	1.159***	1.104***	1.335***	1.233***	1.118***	1.246***	1.263***	1.413***	1.572***	1.231***	1.177***	0.904***
op_notmyway	0.733***	0.651***	0.618***	0.671***	0.642***	0.649***	0.794***	0.709***	0.545***	0.653***	0.894***	0.885***
op_rarelycount	0.841***	0.782***	0.835***	0.821***	0.758***	0.844***	0.776***	0.878***	0.856***	0.906***	0.740***	0.773***
Optimism desirability adj. (DESI)												
op_best	1.028***	1.078***	1.112***	0.965***	1.127***	0.935***	1.057***	1.254***	1.037***	1.025***	0.989***	0.938***
op_future	1.096***	1.041***	1.257***	1.091***	1.056***	1.177***	1.233***	1.385***	1.459***	1.297***	1.017***	0.892***
op_good	0.791***	0.729***	0.945***	0.929***	0.795***	0.828***	1.216***	1.143***	1.298***	1.032***	0.870***	0.827***
Effortful processing (EFFORT)												
ef_classic	0.631***	0.666***	0.736***	0.667***	0.670***	0.684***	0.807***	0.691***	0.714***	0.776***	0.753***	0.714***
ef_modern	0.519***	0.450***	0.552***	0.558***	0.555***	0.681***	0.813***	0.655***	0.584***	0.734***	0.685***	0.702***
ef_supporters	0.860***	0.860***	0.877***	0.865***	0.806***	0.825***	0.859***	0.818***	0.826***	0.768***	0.856***	0.803***
ef_opponents	0.614***	0.568***	0.513***	0.688***	0.589***	0.630***	0.679***	0.704***	0.458***	0.701***	0.707***	0.786***
Latent variable covariances												
IDEN with OPTI	-0.167***	-0.141**	-0.113**	-0.046	-0.147**	0.046	-0.084*	-0.105*	0.066	-0.129**	-0.028	-0.193***
IDEN with DESI	0.285***	0.293***	0.269***	0.232***	0.295***	0.171**	0.345***	0.233***	0.104*	0.238***	0.335***	0.587***
IDEN with EFFORT	0.434***	0.497***	0.268***	0.535***	0.445***	0.508***	0.608***	0.452***	0.516***	0.524***	0.632***	0.651***
OPTI with DESI	-0.833***	-0.832***	-0.873***	-0.824***	-0.847***	-0.853***	-0.785***	-0.908***	-0.901***	-0.862***	-0.759***	-0.605***
OPTI with EFFORT	-0.045	-0.017	-0.131**	-0.086*	-0.037	0.018	-0.247***	-0.041	-0.050	-0.067	-0.013	-0.248***
DESI with EFFORT	0.159***	0.094*	0.268***	0.238***	0.174**	0.136**	0.465***	0.150**	0.165***	0.169***	0.265***	0.543***

Notes: All results are standardized. Robust standard errors and chi-square statistics are estimated using the Satorra-Bentler procedure (Satorra & Bentler, 1994). Country abbreviations: AT = Austria, CH = Switzerland, ESP = Spain, FRA = France, GER = Germany, GRE = Greece, IT = Italy, NOR = Norway, POL = Poland, SWE = Sweden, UK = United Kingdom and USA = United States of America. *** $p < .001$, ** $p < .01$, * $p < .05$.

4 Paper III - Referenda on hosting the Olympics:

What drives voter turnout? Evidence from 12 democratic countries¹²

¹² Streicher, T. (2017). Referenda on hosting the Olympics: what drives voter turnout? Evidence from 12 democratic countries. Unpublished working paper.

Abstract

Public referenda have recently put an end to the ambitions of six cities to host the Olympic Games. The outcome of referenda depends on two major decisions: a content decision whether to support hosting the Olympics and a turnout decision whether or not to cast a vote. Unlike the content decision, the turnout decision has received little attention in sports economics, even though it can distort the outcome of a referendum, lead to a misrepresentation of minorities, and reduce the acceptance of referendum results. I therefore develop a model, the Olympic Referenda Model, to examine the determinants of turnout at Olympic referenda using a population-representative data set from 12 democratic countries. The findings suggest a crucial role for polarization in voter turnout and indicate that arguments from opponents of hosting the Olympics have a stronger effect on voter turnout than supporters' arguments.

Keywords: Bid; campaign; host; mega sport events; Olympic Games; public referenda; turnout; voting

4.1 Introduction

“The voter turnout at the Munich referendum was 29%, with 48% of votes in favor and 52% against the Olympics. This means that, in the end, 15% of the electorate decided the referendum [...]. I know from my time in politics that it’s always easier to mobilize people against something than for something.”

Michael Vesper, CEO of the German Olympic Sports Confederation¹³

Referenda have become a frequent tool across Western democracies (Casella & Gelman, 2008) and this general trend also affects applicant cities for hosting the Olympic Games. Referenda have recently put an end to six Olympic candidatures (Graubünden, Munich, and Krakow for the 2022 Olympics, Hamburg for the 2024 Olympics, Graubünden again for the 2026 Olympics, and Vienna for 2028 Olympics). Additionally, Boston and Budapest cancelled their candidatures for the 2024 Olympics facing a lack of public support and demands for referenda.

Potentially triggered by the rejections of Olympic host ambitions, researchers have begun to examine predictors of support for hosting the Olympics in general (Atkinson, Mourato, Szymanski, & Ozdemiroglu, 2008; Preuss & Werkmann, 2011; Walton, Longo, & Dawson, 2008; Wicker, Whitehead, Mason, & Johnson, 2016) and predictors of support within the Olympic referenda context in particular (Coates & Wicker, 2015; Streicher, Schmidt, Schreyer, & Torgler, 2017b). An individual’s support decision, however, is only one of two important decisions at referenda; the other one being an individual’s decision to vote or to abstain from voting instead.

¹³ The quote of Michael Vesper is taken and translated from Teuffel (2014).

Unlike the support decision, the turnout decision at Olympic referenda has not yet been studied, even though low voter turnout at Olympic referenda can have severe consequences. As Michael Vesper's quote at the introduction of this paper suggests, low voter turnout can lead to a partisan bias, i.e. change the outcome of referenda as compared to full voter turnout (Hajnal & Trounstine, 2005; Lutz, 2007). Low turnout is also frequently associated with a lack of representation of racial and ethnic minorities as well as poor and uneducated people (Hajnal & Trounstine, 2005) and reduces the acceptance of referendum outcomes (Franklin, 1999; Lutz, 2007).

Therefore, this paper addresses calls for research on referenda and the role of local residents for hosting the Olympics from the field of sports economics (Coates & Wicker, 2015; Könecke, Schubert, & Preuss, 2016; Preuss & Solberg, 2006) and capitalize on more general turnout research that currently enjoys a "renaissance" (Green, McGrath, & Aronow, 2013, p. 28). Combining research on the Olympics with general turnout research, I develop and test an Olympic Referenda Model using a unique representative data set with 12,000 respondents from the USA and eleven European countries. To the best of my knowledge, this study is the first to examine turnout at Olympic referenda.

The paper is structured as follows: it starts with a brief summary of recent Olympic referenda outcomes and research to derive the Olympic Referenda Model. This model provides the basis to discuss the drivers of turnout based on general turnout research, to develop the hypotheses, and to describe the data and measurement approach. The paper continues with a discussion of the results along four previously defined theoretical categories and outlines the practical implications. The paper concludes with limitations and future research directions.

4.2 Referenda on mega-sport events and voter turnout

4.2.1 Referenda as the new normal for host city candidates

“We are sorry [...]. We made a mistake. Take the Games elsewhere.”

Bob Jackson, Colorado State Representative¹⁴

In one of the first and probably the most remarkable referendum on hosting the Olympics, the citizens of Denver voted against a bond issue to finance hosting the Olympics *after* the IOC had already awarded Denver the 1976 Olympic Games (Coates & Wicker, 2015; Moore, 2015).¹⁵ While the Denver referendum is the only case where a host city withdrew after having been awarded the Olympics, it marks the starting point of a series of referenda over the last 40 years that were held before the IOC’s host city decision. In the 1980s and 1990s, however, referenda were still an exception.¹⁶ The outcomes of referenda that did take place in this period were rather balanced between an approval of hosting or financially supporting the Olympics (e.g., Lake Placid for the 1980, Anchorage for the 1994, and Salt Lake City for the 1998 Winter Games) and a rejection of the former (e.g., Graubünden for the 1988 Winter Games, Lausanne for the 1994 Winter Games, and Los Angeles for the 1984 Summer Games).¹⁷

Since 2000, the importance of public approval for the Olympics appears to have increased, as indicated by the fact that the IOC has since then conducted independent

¹⁴ See American Press (1971, p. 10).

¹⁵ Four months after Denver’s withdrawal, Innsbruck (Austria) was awarded the 1976 Olympics by the IOC because it already had some of the required infrastructure from its hosting of the 1964 Olympics in place.

¹⁶ The low number of referenda can partly be attributed to political systems within host cities where participatory democracy was at lower levels (e.g., Moscow 1980, Sarajevo 1984, and Seoul 1988). However, referenda also did not take place in more developed democracies (e.g., Calgary 1988, Barcelona 1992, and Nagano 1988).

¹⁷ The Los Angeles referendum prevented public funding for hosting the Olympics. The Olympics were nevertheless hosted in Los Angeles because a special TV revenue sharing contract and other measures substituted public funding (Lenskyj & Wagg, 2012).

opinion surveys in each candidate city (Lauermann, 2016b). While there was still a limited number of referenda and a balance of support (Vancouver for the 2010 and Munich for the 2018 Winter Games) and rejection (Bern for the 2010 and Salzburg for the 2014 Winter Games) at the first Olympic referenda in the new millennium, both the number of referenda and the share of negative referenda outcomes have increased significantly in the recent past.¹⁸ As stated earlier, referenda have recently put an end to six candidatures¹⁹ and additionally, Boston and Budapest cancelled their candidatures facing a lack of public support and demands for referenda.

4.2.2 Research on Olympic referenda

Against this background, sport economists have recently begun to stress the role of public approval for hosting the Olympics using a variety of different data sets and thematic emphases. Three recent papers exemplify this variety: Coates and Wicker (2015) use secondary data from the Munich 2022 referendum and identify, amongst other factors, unemployment, strength of certain political parties, and hotel beds per capita as determinants of support in the referendum. Könecke et al. (2016) conduct a qualitative content analysis of the media coverage of the Munich 2022 referendum and point at the role of damaged brand images of international sport organizations and their events. And lastly, Streicher et al. (2017b) use survey data to compare the effect of social versus economic factors for people's support for hosting the Olympics and attribute a more dominant role to social factors.

¹⁸ The referenda for Munich 2018 took place in Garmisch-Partenkirchen, which was suggested as a venue for some Olympic skiing events (Chelsom-Pill, 2011). The referendum in Salzburg was non-binding and city officials decided to apply despite the negative referendum outcome (Dachs & Floimair, 2008).

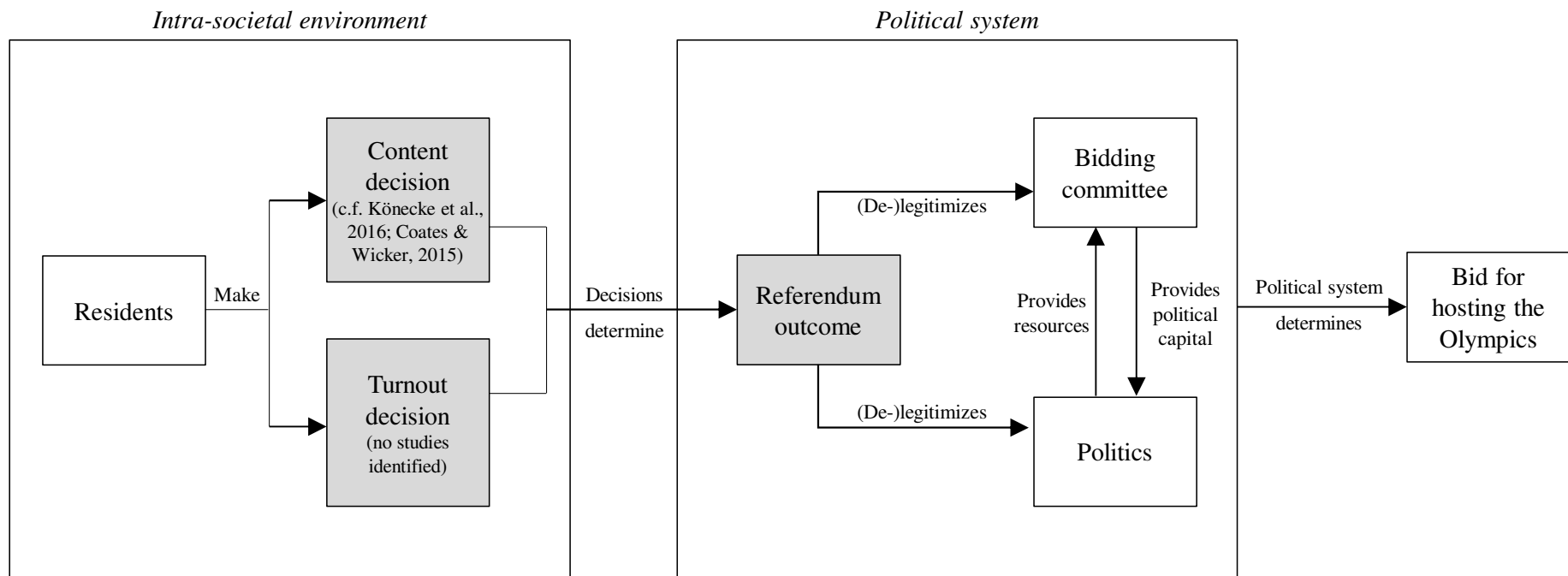
¹⁹ Graubünden 2022, Munich 2022, Krakow 2022, Hamburg 2024, Graubünden 2026, and Vienna 2028 ended their candidatures following failed referenda.

To review the current state of research more broadly and in a structured manner, I developed the “Olympic referenda model” (ORM) that will be outlined in the following (see Figure 6). The ORM is based on two seminal papers by Preuss and Solberg (2006) and Easton (1965). It postulates that interactions in the political system of the host community determine the bid for hosting the Olympics.

While the *referendum outcome* is a central component of the political system, it is important to note that the referendum outcome does not determine the bid for hosting the Olympics on its own. Los Angeles’s bid for the 1984 Summer Olympics or Salzburg’s bid for the 2014 Winter Olympics exemplify that a negative referendum outcome does not necessarily put an end to a bid for hosting the Olympics (Dachs & Floimair, 2008; Lenskyj & Wagg, 2012). Vice-versa, Olympic plans can be withdrawn despite positive referenda outcomes like in the case of Oslo’s bid for the 2022 Winter Olympics (Fouche, 2013). Referenda therefore do not directly determine a bid for a hosting but rather exert their influence through the interaction with stakeholders in the political system.

The *bidding committee* is a major stakeholder in the political system (Preuss & Solberg, 2006). It develops a hosting concept and engages in campaigning and lobbying efforts towards individuals and interest groups, including national and international sports federations. These efforts can cost several million dollars and are often supported by public resources, be it through manpower from the applicant city’s admin, tax money or the use of public infrastructure. Bidding committees need legitimacy from the public for this use of public resources and ultimately, for their involvement as major stakeholder in the Olympic bid (Hautbois, Parent, & Séguin, 2012; Mitchell, Agle, & Wood, 1997; Westerbeek, Turner, & Ingerson, 2002). Depending on their outcome, referenda provide or deprive bidding committees of this legitimacy.

Figure 6 - Olympic referenda model (ORM)



Sources: adapted from Preuss and Solberg (2006) and Easton (1965).

Politicians are another major stakeholder in the political system (cf. Hautbois, Parent, & Séguin, 2012; Westerbeek, Turner, & Ingerson, 2002). They provide bidding committees with public resources, which makes them accountable to and require legitimacy from the public (Westerbeek et al., 2002), e.g., through referenda. When providing public resources, however, politicians rather engage in political reasoning as compared to a deliberate analysis of the pros and cons of their support (Emery, 2002). Events such as the Olympics give politicians the opportunity to foster their own political ambitions (Schmidt, 2017; Westerbeek, Turner, & Ingerson, 2002). Politicians could thus be incentivized to provide public resources because they promise a positive effect for their own political capital.²⁰

In summary, the *political system*, through the interaction of its stakeholders, processes input from the environment and then determines whether or not a bid for hosting the Olympics will be prepared (Preuss & Solberg, 2006). The input consists of two decisions that residents make in an intra-societal environment: a content decision (“*Am I in favor of hosting the Olympics?*”) and a turnout decision (“*Am I going to cast a ballot?*”).²¹

The *content decision* has been addressed by researchers in multiple ways. A number of studies examine residents’ support using survey data. While some survey-based studies use survey instruments that explicitly ask for people’s support (Schmidt, Schreyer, & Streicher, 2015; Streicher, Schmidt, Schreyer, & Torgler, 2017b), other studies use

²⁰ For example, Almeida, Coakley, Marchi Júnior, and Starepravo (2012) note allegations that political support for the Brazilian bids for the FIFA World Cup and the Olympic Games was intended to foster Dilma Rousseff’s political capital and her campaign to become the Brazilian president. Similarly, Baade and Sanderson (2012) argue that one reason why Chicago’s Mayor Richard M. Daley suddenly initiated Chicago’s bid for the 2016 Summer Olympics was to deflect the public’s attention away from a corruption scandal, which can be interpreted as an act to protect his political capital.

²¹ Preuss and Solberg (2006, p. 394) distinguish between an extra-societal environment (sport governing bodies) and an intra-societal environment (residents). For reasons of simplification and due to the centrality of referenda in this study, I focus on the intra-societal environment only.

willingness to pay instruments (Atkinson, Mourato, Szymanski, & Ozdemiroglu, 2008; Preuss & Werkmann, 2011; Walton, Longo, & Dawson, 2008; Wicker, Whitehead, Mason, & Johnson, 2016). Coates and Wicker (2015) complement this survey-based research by using secondary data from the actual referendum on Munich's bid for the 2022 Olympics. Apart from the aforementioned studies, an additional type of study focusses on discussing the role of media as a major determinant of the support for hosting the Olympics (Kim, Choi, & Kaplanidou, 2015; Könecke, Schubert, & Preuss, 2016; Ritchie, Shipway, & Monica Chien, 2010). In summary, many studies on support for hosting the Olympics share two characteristics. First, they put an emphasis on socio-demographics. Males seem to support a hosting more strongly whereas there is some evidence that age has a negative impact (Streicher, Schmidt, Schreyer, & Torgler, 2017b; Walton, Longo, & Dawson, 2008; Wicker, Whitehead, Mason, & Johnson, 2016). Income and interest in sports seem to have positive impact on support, too (Preuss & Werkmann, 2011; Walton, Longo, & Dawson, 2008). Second, most studies stress the importance of intangible benefits (e.g., pride, prestige, and other social factors) as opposed to tangible benefits (e.g., employment, tourist inflow, and other economic factors) of hosting the Olympics (see for example, Streicher, Schmidt, Schreyer, & Torgler, 2017b; Wicker, Whitehead, Mason, & Johnson, 2016).

In contrast to the content decision, the *turnout decision* of whether people cast a vote in Olympic referenda has not yet been studied, even though turnout can have three important effects on Olympic referenda. First, low turnout can lead to a partisan bias, i.e. alter the outcome of a referendum as compared to the outcome that would occur with full turnout (Hajnal & Trounstein, 2005; Lutz, 2007). For the example of Swiss referenda, Lutz (2007) provides evidence that 35% of referenda would have had a different approval rate at full turnout. In these cases, the lower than full turnout has

avored outcomes supported by left-wing parties (Lutz, 2007). Due to the frequent opposition of left-wing parties against hosting the Olympics, it is thus possible that low turnout contributes to the rejection probability of hosting plans.²²

Second, low turnout can imply a lack of representation of the interests of non-voters, who consist of a disproportionately high share of poor, racial and ethnic minorities as well as less educated people (for a brief review, see Hajnal & Trounstine, 2005). These groups' concerns might be overlooked and they might be underprivileged when it comes to the distribution of public goods (Bennett & Resnick, 1990; Martin, 2003) associated with the Olympics.

Third, high turnout can positively affect the acceptance of referendum results (Franklin, 1999; Lutz, 2007). This can potentially reduce protest and activism that frequently accompanies today's Olympics (Boykoff, 2014b) and channel opposition into more constructive forms of political participation. For these three reasons and due to the "renaissance" (Green et al., 2013, p. 28) that general research on voter turnout currently enjoys, I consider it worth exploring the determinants of voter turnout at Olympic referenda in the next paragraphs.

4.3 Hypotheses and empirical framework

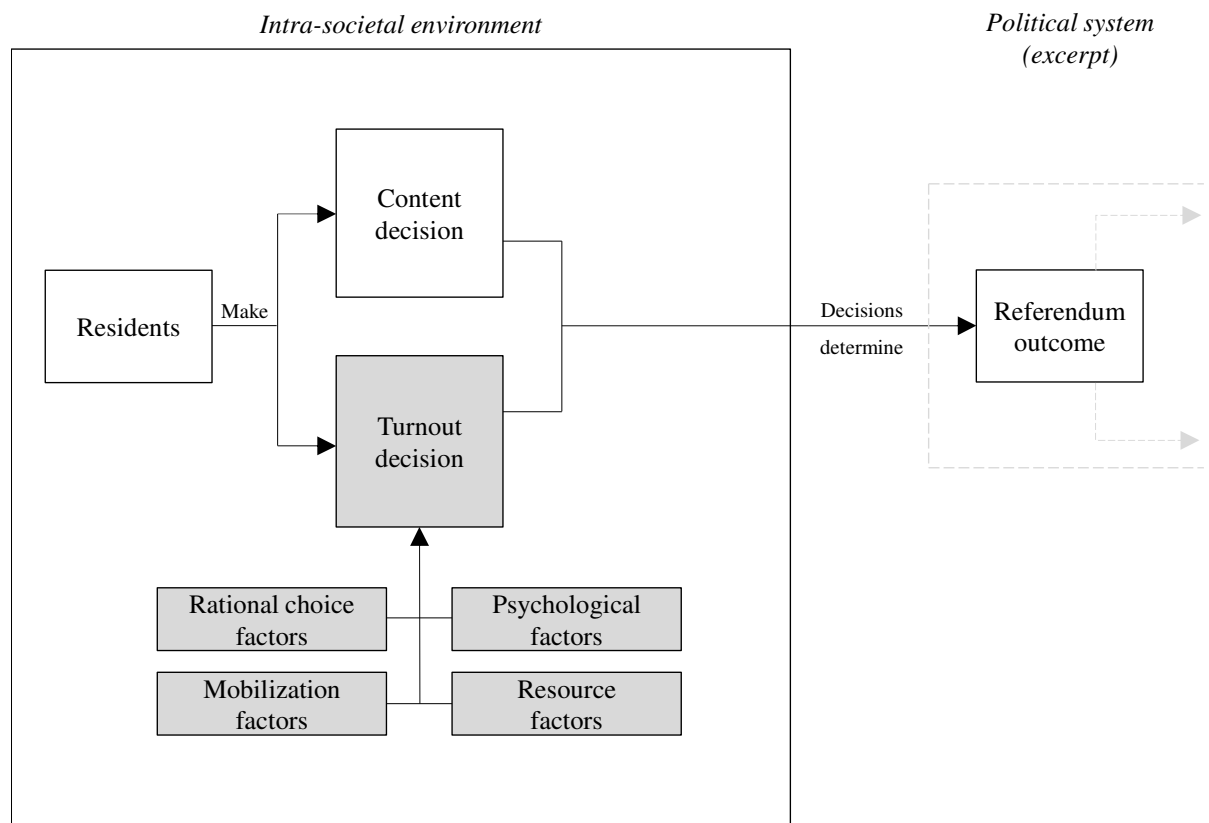
4.3.1 Overall model

Even after decades of research on voter turnout, researchers are still examining the micro-foundations of voter turnout (Arceneaux & Nickerson, 2009; Blais, 2006) and have not agreed on a "core" model of voter turnout (Geys, 2006b, p. 637). Smets and

²² For example, Coates and Wicker (2015) find that the share of favorable votes in the referendum on Munich's bid for the 2022 Winter Olympics was significantly lower in communities with a high share of votes for the leftist party.

van Ham (2013), for example, review 90 studies on voter turnout that use over 170 different independent variables and find that no single variable has been included in every study. They argue that a multitude of causal mechanisms could drive voter turnout and that the relevance of these mechanisms could be both voter- and overall context-specific. To capture the multitude of these mechanisms and their effect on turnout at Olympic referenda, I draw on four categories of variables identified by Smets and van Ham (2013) that drive voter turnout: rational choice factors, psychological factors, mobilization factors, and resource factors (see Figure 7).

Figure 7 - Drivers of the turnout decision in the Olympic referenda model



4.3.2 Hypotheses

The *rational choice* perspective argues that voters conduct a cost-benefit analysis whereby they compare the benefits with the cost of voting (Downs, 1957). The level of support for a possible voting outcome is a strong indicator of an individual's cost-

benefit analysis and thus his propensity to vote. If a voter is indifferent between the choices of an election, i.e. perceives a balance of costs and benefits, it is rational for him not to vote (Geys, 2006a). In contrast to indifferent people, those people with extreme opinions are more likely to vote (Zorn & Martin, 1986). I intend to test these findings from general elections for Olympic referenda using the following hypothesis:

H1: The support for hosting the Olympics has a quadratic effect on voter turnout, i.e. high and low levels of support lead to a higher turnout than indifference.

Research on support for hosting the Olympics has recently departed from a pure focus on economic motivations and emphasized social motivations (Streicher, Schmidt, Schreyer, & Torgler, 2017b; Wicker, Whitehead, Mason, & Johnson, 2016). This trend is paralleled in recent turnout research that portrays voting as an act involving both the consideration of personal benefits and the benefits of others (Fowler, 2006). I put this recent view to test using the following hypothesis:

H2: Economic and social motivational factors have a positive effect on voter turnout.

While voters can come to a conclusion whether costs or benefits from a hosting would prevail, it is unclear whether they care about the result of their analysis. The outcome, be it positive or negative, might just not be important enough to them. It is thus no surprise that low perceived importance of an election lowers voter turnout and induces voters to delegate their decision (Franklin, 1999; Matsusaka, 1995), leading to the following two hypotheses:

H3: The perceived importance of the hosting question has a positive effect on voter turnout.

H4: The tendency to delegate the hosting decision to politicians has a negative effect on voter turnout.

In addition to rational choice, Smets and van Ham (2013) use *psychological factors* as another category of variables explaining turnout. Smets and van Ham (2013) show that most psychological variables in their literature review do not have a significant effect on voter turnout. I therefore focus on a psychological variable not covered in their literature review: optimism. Optimism has an effect on how people perceive themselves and their environment, how they process information and, most importantly, how they make their choices based on these information (Forgeard & Seligman, 2012). Political campaigns, which cost several million US dollars for Olympic applicant cities, try to influence the level of optimism about electoral outcomes (Krizan & Sweeny, 2013). The optimism literature suggests that optimists address problems using an approach strategy while pessimists use an avoidance strategy (Nes & Segerstrom, 2006). This would imply that optimists rather vote for hosting the Olympics while pessimists rather vote against it. High and low levels of optimism could thus both foster turnout at Olympic referenda. Zorn and Martin (1986) suggest this effect of optimism beyond the Olympics context and further argue that a medium level of optimism leads to a comparatively lower voter turnout. I address the applicability of their theory for the Olympic referenda context using the following hypothesis:

H5: Optimism has a quadratic effect on voter turnout, i.e. high and low optimism levels lead to a higher voter turnout than medium levels.

Mobilization factors are another category identified by Smets and van Ham (2013). The category is based on the idea that political parties, interest groups, and personal social networks provide citizens with information relevant to the election and decrease citizens' voting costs if citizens are receptive to these information sources. While there is a variety of potential information sources for a resident's hosting decision (see Preuss (2004, p. 49) for a brief overview), I decide to test a resident's openness towards three information sources:

H6: *Openness towards supporters' arguments for hosting the Olympics has a positive effect on voter turnout.*

H7: *Openness towards opponents' arguments for hosting the Olympics has a positive effect on voter turnout.*

H8: *Openness towards arguments of friends and acquaintances on hosting the Olympics has a positive effect on voter turnout.*

The fourth category of variables considered is *resource factors*. The basic idea behind this category is that voting requires resources. Four commonly observed resource factors are age, gender, education, and income. It is well-established that the likelihood to vote increases with age (Blais, 2006; Smets & van Ham, 2013). With an increasing age people have had more opportunities to learn from previous behavior around votes, which reduces their voting cost and contributes to a stronger preference for voting (Geys, 2006a). Unlike for education and income that are usually found to be positively associated with turnout (Geys, 2006a; Smets & van Ham, 2013), the literature is less unanimous when it comes to gender. While men have long been considered to have more resources to vote (e.g., the voting right itself), recent studies find no (Smets & van Ham, 2013) or even a negative effect of male gender on turnout (Geys, 2006a). I suggest to test both the established effects of age, education, and gender as well the less clear effect of gender on turnout in the Olympics context using the following hypotheses:

H9: *Age has a positive effect on voter turnout.*

H10: *Education has a positive effect on voter turnout.*

H11: *Household net income has a positive effect on voter turnout.*

H12: *Being male has a positive effect on voter turnout.*

Apart from the aforementioned resource factors derived from the general turnout literature, I consider two additional resource factors important for the Olympics context.

First, sports and sporting events can foster pride among certain population segments (e.g., Hallmann, Breuer, & Kühnreich, 2013; Pawlowski, Downward, & Rasciute, 2014). The ability to experience pride from hosting the Olympics could thus function as a powerful resource that increases the voting likelihood of individuals. Second, media exposure can influence people's perception of the Olympics (Kim, Choi, & Kaplanidou, 2015; Könecke, Schubert, & Preuss, 2016; Ritchie, Shipway, & Monica Chien, 2010) and outside the Olympics context, it has been shown that media exposure influences voter turnout (Gerber, Karlan, & Bergan, 2009). I hypothesize that this finding also holds for the Olympics context and test it together with the hypothesis on pride:

H13: Anticipated pride from hosting the Olympics has a positive effect on voter turnout.

H14: Consumption of sports media has a positive effect on voter turnout.

4.3.3 Data collection

I used data from a representative online survey conducted between March and April 2015 in the United States and eleven European countries (Austria, France, Germany, Greece, Italy, Norway, Poland, Spain, Sweden, Switzerland, and the United Kingdom). I selected the eleven European countries based on three criteria. First, the countries were required to have at least the democracy status *flawed democracy* according to the Economist's Democracy Index to ensure a meaningful political-institutional context to examine voter turnout (The Economist Intelligence Unit, 2014). Second, there had to be evidence of a country's recent aspiration to host the Olympics as indicated by an application for or hosting of the Olympics within the last twenty years. Third, I prioritized eleven out of the remaining European countries based on gross domestic product in purchasing power parity as an indicator of the welfare loss potential from suboptimal referenda decisions on hosting the Olympics.

The English questionnaire was developed and tested by the author team. The market research company Nielsen sports ensured the translation/back-translation of local language versions by native speakers, programmed the local language versions of the online survey and recruited the respondents in all selected countries. A total of 14,051 respondents took part in the survey. 753 respondents were excluded due to overly rapid completion and uniform response patterns and an additional 1,298 respondents were excluded because they participated in the survey after quota targets in terms of age, gender, country, and region were already reached, which resulted in a population-representative data set with 12,000 respondents in 12 countries.

4.3.4 Measurement

I generally draw on widely cited question types from both the Olympics and the voter turnout literature to measure the variables. In the following, I first describe the measurement of the dependent variable, before I provide information on the measurement of the independent variables.

VOTE is the dependent variable. I use a 5-point Likert scale to measure turnout intention with responses to the statement “Please imagine that the [country] government will organize an opinion survey to analyze the attitude of the population towards hosting the Olympic Games in [country]. How likely is it that you will participate in this opinion survey?” ranging from “very unlikely” to “very likely”. Measuring turnout intention as opposed to asking respondents about their turnout in the past election or using validated turnout data based on official voter records is one of the three common methods of measuring a turnout variable (Smets & van Ham, 2013). I excluded the other two measurement options because of, first, a lack of past Olympic referenda in some countries and, second, a general lack official voter records in most countries (Smets & van Ham, 2013).

I summarize the measurement and theoretical basis of all independent variables in the Appendices 4a and 4b. Due to their centrality to the analysis, I describe the two independent variables SUPPORT and OPTIMISM in more detail.

SUPPORT proxies an individual's level of support for hosting the Olympics because support as compared to indifference has a positive effect on turnout (Geys, 2006a). Drawing on other studies on the provision of public goods (Kahneman, Ritov, Jacowitz, & Grant, 1993; Streicher, Schmidt, Schreyer, & Torgler, 2017b), I measure support using a 5-point Likert scale with responses to the statement "I am in support of hosting the Olympic in [country]" with response options ranging from "I strongly disagree" to "I fully agree".

OPTIMISM proxies the general optimism of an individual. It is based on the well-established reflective Life Orientation Test-Revised construct by Scheier et al. (1994). It consists of six items that I averaged. The construct is sufficiently reliable with a Cronbach's alpha of 0.74 (Churchill, 1979).

For the analysis of these variables, I use ordinary least squares (OLS) regressions with robust standard errors to minimize a potential heteroscedasticity bias. Using the statistics software Stata 14, I conduct the analyses both for each of the twelve obtained country samples individually as well as for a pooled sample with the full 12,000 respondents. If hypotheses suggest testing non-linear relationships (H1 and H5), I provide a comparison of alternative model specifications. I discuss the results of the analyses in the next paragraph along the four factor categories affecting turnout in the research model.

4.4 Results and discussion

4.4.1 Rational choice factors

I find strong evidence for our first hypothesis indicating that support for hosting the Olympics has in fact a quadratic effect on turnout at Olympic referenda, i.e. low and high support lead to higher turnout than indifference. Both in the overall model and in all twelve individual country models, the support coefficient and its squared counterpart are significant at the 0.1% level (see Table 5).

I also test the quadratic specification of effect of support on turnout against two alternative model specifications of support, namely a linear and a cubic specification (see Appendix 5). For every country sample and the overall sample, however, a quadratic specification of support explains more variance in turnout than a linear specification as indicated by the adjusted R^2 . The cubic alternative, if at all, only leads to a marginally higher adjusted R^2 while support coefficients do not have a significant effect on turnout in nine out of twelve countries.

I therefore conclude that the effect of support on turnout is indeed quadratic as depicted in Figure 8 (cf. Appendices 8a-b). Overall, the finding suggests that polarization of the public opinion towards hosting the Olympics drives voter turnout internationally.

Paper III – Referenda on hosting the Olympics: What drives voter turnout?
Results and discussion

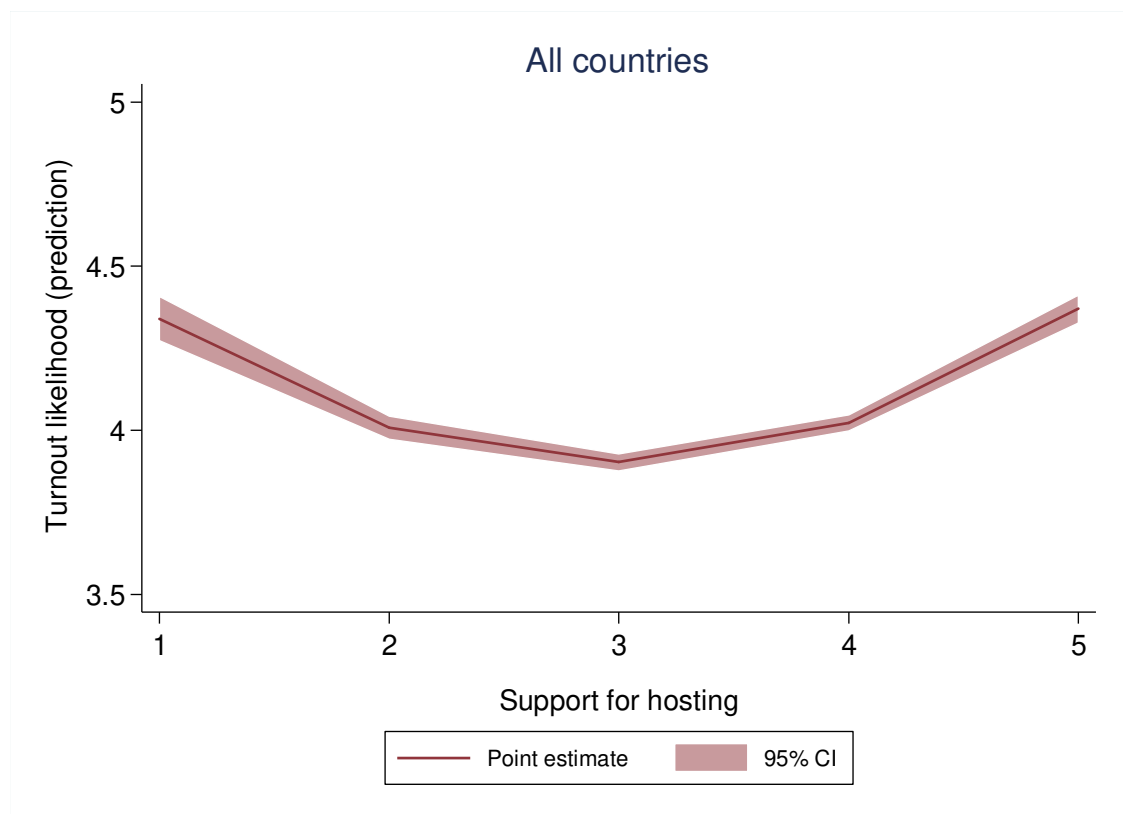
Table 5 - Factors that shape voter turnout (final model)

Variables	All countr.	AT	CH	ESP	FRA	GER	GRE	IT	NOR	POL	SWE	UK	USA
Rational choice factors													
Support	-0.671***	-0.599***	-0.642***	-0.689***	-0.495***	-0.372**	-0.498***	-0.417***	-1.273***	-0.717***	-0.595***	-0.597***	-0.647***
Support##Support	0.113***	0.110***	0.113***	0.116***	0.087***	0.065***	0.096***	0.070***	0.202***	0.112***	0.111***	0.105***	0.097***
Economic motivation													
Tax	0.024**	-0.048	0.046†	0.041	0.014	0.049	0.001	0.048	0.129***	0.007	0.077*	0.035	-0.016
Transparency	0.065***	0.163***	0.130**	0.101*	0.067	0.039	-0.028	0.141**	0.078**	0.081*	0.112**	0.009	0.054†
Fairshare	0.024*	0.092*	-0.015	0.036	-0.010	0.065†	-0.028	0.060	0.020	0.028	0.155***	-0.021	0.006
Econimpulses	-0.011	0.036	0.009	-0.030	-0.001	-0.030	-0.026	-0.072†	-0.003	0.062	-0.025	0.050	-0.045
Infrastructure	0.096***	0.105*	0.147***	0.026	0.136*	0.173***	0.034	0.126**	0.040	0.067	0.109**	0.061	0.134***
Social motivation													
Community	-0.026*	-0.015	0.005	-0.028	-0.033	0.024	-0.027	-0.125**	-0.021	-0.007	-0.027	0.005	-0.018
Reputation	0.027†	-0.056	0.037	0.080	0.008	0.029	0.102*	-0.001	0.006	-0.052	-0.029	0.093†	0.025
Sportsculture	0.021	0.053	-0.020	-0.034	0.067	-0.023	0.032	0.042	0.051	0.011	0.010	-0.038	0.065
Importance	0.045***	0.040	0.033	0.040	0.095**	0.068*	0.053	-0.010	0.149***	0.046	-0.006	-0.039	-0.025
Delegation	-0.044***	-0.104***	-0.078**	-0.017	-0.024	-0.066*	-0.020	-0.007	-0.091***	-0.025	-0.089**	0.002	-0.006
Psychological factors													
Optimism	-0.474***	-0.224	-0.277	-1.243***	-0.794*	0.131	0.288	-0.428†	-0.315	-0.220	-0.583	-0.475*	-0.569**
Optimism##Optimism	0.080***	0.033	0.048	0.190***	0.138*	-0.011	-0.033	0.071†	0.043	0.042	0.101†	0.082*	0.104***
Mobilization factors													
Considersupp	0.015	-0.048	-0.031	0.016	0.020	-0.004	-0.020	0.055	0.076*	0.047	-0.009	0.112†	0.076
Consideropp	0.085***	0.071	0.113**	0.111*	0.155***	0.118*	0.095*	-0.018	0.130***	0.077*	0.025	0.029	0.048
Considerfracq	0.057***	0.187***	0.062	-0.017	-0.024	-0.008	0.031	0.042	-0.024	0.058	0.096†	0.051	0.138**
Resource factors													
Age	0.006***	0.004	0.008***	0.005†	0.001	0.008**	0.009**	0.001	0.007***	0.001	0.004†	0.008***	0.005*
Gender (male = 1)	0.029	0.070	0.023	-0.083	0.031	0.178**	0.095	-0.076	0.063	0.047	-0.034	-0.021	0.000
Education													
Medium	0.129***	0.185†	0.027	0.331**	0.127	-0.002	0.150	0.099	0.188	0.067	0.013	0.192	0.014
High	0.219***	0.061	0.159*	0.363**	0.094	0.155	0.305	0.147	0.343**	0.109	0.180	0.296*	0.204
Household net income													
Medium	0.078***	0.036	0.117†	0.009	0.057	0.109	0.170*	0.010	0.082	0.113†	0.036	0.091	0.045
High	0.090***	0.149†	0.103	0.050	0.113	0.154†	-0.158	-0.055	0.105	0.159*	0.039	0.002	0.099
Nationalpride	0.062***	-0.046	0.019	0.147***	0.041	0.065	0.046	0.115**	0.056	0.114*	0.089*	0.059	0.222***
Sportconsump	0.087***	0.114***	0.111***	0.033	0.077*	0.046	0.087**	0.061*	0.115***	0.130***	0.097**	0.071**	0.072**
R²	0.215	0.248	0.275	0.218	0.174	0.220	0.166	0.154	0.363	0.265	0.254	0.251	0.355

Notes: *** represents statistical significance at the 0.1% (p < .001), ** at the 1% (p < .01), * at the 5% (p < .05) and † at the 10% (p < .1) level.

Country abbreviations: AT = Austria, CH = Switzerland, ESP = Spain, FRA = France, GER = Germany, GRE = Greece, IT = Italy, NOR = Norway, POL = Poland, SWE = Sweden, UK = United Kingdom and USA = United States of America.

Figure 8 - Quadratic effect of support on voter turnout (pooled sample)



Unlike for the first hypothesis, I find only mixed support for the second hypothesis that economic and social motivations have a significant positive effect on voter turnout across the twelve surveyed countries. All social factors and three out of five economic factors (tax, fairshare, and econimpulses) are significant in three countries at the most. Two economic factors, however, are an exception. First, the perceived importance of transparency about the use of funds related to hosting the Olympics has a significant positive effect on turnout in eight out of twelve survey countries. Second, the perceived importance of a sustainable infrastructure concept for hosting the Olympics is a significant driver of voter turnout in seven countries. Taking into account previous research (Streicher, Schmidt, Schreyer, & Torgler, 2017b; Wicker, Whitehead, Mason, & Johnson, 2016), the findings suggest that economic and social motivations rather influence the content than the turnout decision at referenda on hosting the Olympics.

The hypotheses that the perceived importance of the hosting question has a positive (H3) and that the tendency to delegate the hosting decision to politicians has a negative effect on turnout (H4) hold for the overall model and for three (H3) or five (H4) out of twelve countries. I do not have a definite answer why the effects are significant in some countries while they are not in others. However, socially desirable responding, i.e. the tendency to present oneself as an engaged democratic citizen, and the political-institutional context within each country could play a role. With respect to the latter, I note that countries with a significant effect of the delegation tendency (Austria, Germany, Norway, Sweden, and Switzerland) score higher on The Economist's democracy index than countries with no significant effect (score of 9.11 versus 7.85; The Economist Intelligence Unit, 2014). This finding could be interpreted from a cost-benefit perspective that people have an incentive to save voting costs and delegate their vote on hosting the Olympics where the democratic system is rather strong and potentially produces an adequate hosting decision even without people's own effort. I hope that future research will further examine this interpretation.

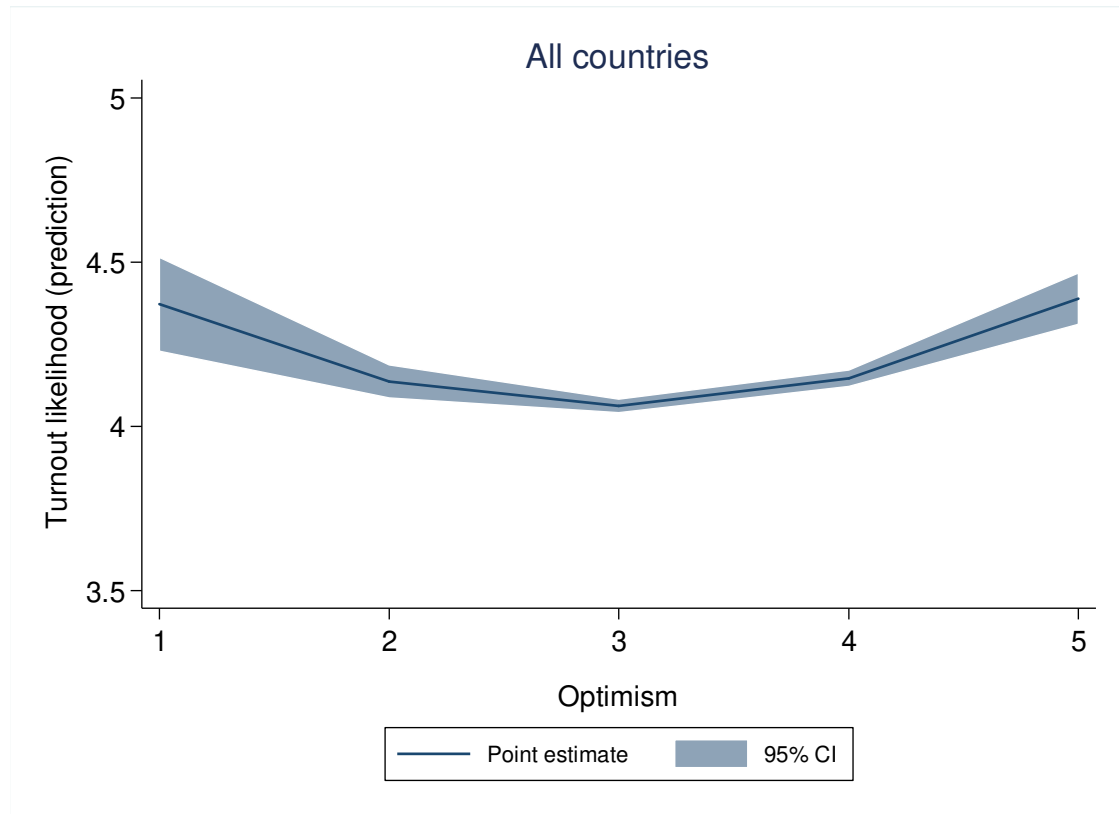
4.4.2 Psychological factors

The hypothesis that optimism has a quadratic effect on voter turnout holds for the overall model as well as a group of Mediterranean (France, Italy, and Spain) and Anglo-American countries (the United Kingdom and the United States) in the sample. Figure 9 and Appendices 9a-b depict the quadratic effects graphically.

Interestingly, most countries where optimism has no significant effect have recently experienced a failed referendum or a withdrawal of their Olympic application amid a lack of public support (Austria, Switzerland, Germany, Norway, and Sweden) while the countries where optimism has a significant effect have not experienced such events at the time of the survey. Optimism could therefore play a more decisive role for voter

turnout where people have less exposure to concrete plans for hosting the Olympics and thus rather rely on psychological factors.

Figure 9 - Quadratic effect of optimism on voter turnout (pooled sample)



4.4.3 Mobilization factors

Testing hypotheses six to eight, I examine the effect of people's openness towards the arguments of supporters (H6), opponents (H7), and friends and acquaintances (H8) on voter turnout. While openness towards supporters and friends and acquaintances only has a significant effect in two or, respectively, three countries, the openness towards opponents' arguments has a significant effect in seven countries. In contrast to the openness towards supporters' arguments, the effect of openness towards opponents' arguments also has a significant effect on voter turnout in the overall model.

These results are in line with a recent finding of Könecke et al. (2016), who found that supporters were not as dominant communicators around the referendum on hosting the

Olympics in Munich 2022 as the authors expected and that supporters did not manage to establish sufficient communication with residents. In summary, these findings and recent research point at an asymmetry between the effects of supporters versus opponents on voter turnout, with opponents being the more dominant information source for turnout.

4.4.4 Resource factors

The examination of resource factors reveals that their effect on turnout at Olympic referenda is in line with the general turnout literature for some resource factors while it differs for other resource factors. In line with more general turnout literature (Smets & van Ham, 2013), I find that age is positively associated with voter turnout at Olympic referenda (H9) in both the overall model and eight out of twelve countries. Also in line with recent findings (Smets & van Ham, 2013), I can reject the hypothesis that being male has a positive effect on voter turnout (H12) in the overall model and for eleven out of twelve countries. The only exception is Germany where being male has a statistically significant effect on voter turnout at the 1% level.

The findings further reveal that the positive effects of education (H10) and household net income (H11) on voter turnout suggested in the general turnout literature do rather not apply to turnout at Olympic referenda. Dummy variables for medium and high education or income are only significant in two to four out of twelve countries. While education and income seem to be significant predictors of the content decision at Olympic referenda (see for example, Streicher et al., 2017b), the findings suggest that they are not generally significant predictors of the turnout decision at Olympic referenda.

Apart from resource factors that are examined in general turnout studies, I also provide evidence on the effect of the two context-specific resource factors: anticipated pride (H13) and sports media consumption (H14). The evidence for a significant effect of anticipated pride is mixed, with anticipated pride being statistically significant in five out of twelve countries. Sports media consumption, on the other hand, has a statistically significant effect on voter turnout at Olympic referenda in ten out of twelve countries. Sports media consumption thus seems to be an important resource for voters to cope with voting costs. Overall, the findings suggest that the effect of traditional resource factors can differ and that non-traditional resource factors such as sports media consumption play an important role for turnout at Olympic referenda.

4.4.5 Practical implications

Low voter turnout can change the outcome of referenda on the multi-billion dollar event of hosting the Olympics. I therefore believe it is worth discussing five important practical implications of this study.

The first practical implication relates to the finding that support has a quadratic effect on voter turnout, i.e. both low and high levels of support raise voter turnout as compared to indifference. Polarization of the electorate is thus needed to foster voter turnout at Olympic referenda. It might not be enough for supporters to convince voters that hosting the Olympics is rather positive or for opponents to convince voters that hosting the Olympics is rather negative. Supporters and opponents need to fully convince their target groups and move them to the minimum or maximum boundary levels of support (see Figure 8) to make sure they actually cast a vote. Vice-versa, the findings of this study show that de-polarization reduces turnout, which can be used strategically through an approach called “asymmetric demobilization” that some political scientists believe has contributed to German Chancellor Merkel’s electoral

success over more than a decade. This strategy entails holding still on controversial issues and putting core topics of the political opponent on the own agenda, thereby demobilizing more of the opponent's than of one's own voters (Arnold & Freier, 2016).

The second practical implication relates to the common campaign practice of supporters to spend substantial funds on maintaining optimism (Krizan & Sweeny, 2013). The findings of this study suggest that optimism only has a significant effect on voter turnout in countries without a recent history of failed referenda or withdrawals of hosting plans. Campaign strategists of applicant cities from a country with such a history should therefore run tests before spending scarce campaign resources on increasing optimism.

In addition to optimism, campaign strategists should also bear in mind that economic and social motivations that have an effect on residents' content decision at Olympic referenda do not automatically have an effect on residents' turnout decision. The perceived importance of transparency and sustainable infrastructure, however, are significant predictors of turnout in the majority of surveyed countries. It might therefore be useful to address these two topics in turnout campaigns.

The fourth finding with strong practical relevance is an imbalance between people's openness towards supporters' as opposed to opponents' arguments. It seems to be easier for the voice of opponents to be heard than for the voice of supporters. This interpretation is supported by research of Könecke et al. (2016), who conclude that supporters of hosting the Olympics in Munich did not manage to establish sufficient communication with local residents. Lauermaun (2016a) also identifies the *No Boston Olympics* group as the more dominant voice than the comparably unknown pro-Olympia *Boston 2024 Partnership*. Going forward, I believe that more elaborate

communication plans can help supporters to mobilize the electorate and that such plans need to reach a similar importance than infrastructure and financing plans of a bid.

Lastly, I find that young residents as compared to their older fellow citizens rather abstain from voting at Olympic referenda. This is particularly problematic from a pro-Olympia perspective because support for hosting the Olympics is the highest among young supporters (Streicher et al., 2017b). Applicant cities facing an Olympic referendum therefore run the risk of forgoing a support base that could alter the referendum outcome. A greater involvement of young population segments in the organizing committee and targeted mobilization efforts towards young voters could mitigate this risk.

4.4.6 Limitations and future research directions

Turnout is a popular research topic outside the Olympics context (Green et al., 2013). Even after decades of turnout research, however, the micro-foundations of turnout are still debated and a core model of voter turnout has not yet emerged (Arceneaux & Nickerson, 2009; Blais, 2006; Geys, 2006b). Drawing on this general turnout research that itself undergoes a dynamic development at its micro-foundational level, I am the first to examine referenda in a unique context—the Olympics context. This study is thus by any means exploratory and I expect future research to identify additional determinants of voter turnout at Olympic referenda. Together with the Olympic referenda model, I hope that the empirical findings of this study are the starting point for such exploratory and also confirmatory research.

Another frequent limitation in survey-based turnout research is the influence of social desirability bias (Smets & van Ham, 2013), i.e. the tendency to present oneself favorably towards others. Respondents tend to report in post-election surveys that they

voted even though turnout data from public records shows that some of them in fact did not vote (Smets & van Ham, 2013). Like all other survey-based turnout studies, I cannot rule out that turnout bias has an effect on the results. However, I assume that the anonymous online format of the underlying survey mitigates the risk of socially desirable responding as compared to post-election surveys where people are at times contacted in person. I nevertheless hope that turnout scholars will develop research methods to test and adjust for socially desirable responding in turnout surveys.

In addition, this study provides evidence that respondents are more open to the arguments of opponents than to the arguments of supporters of hosting the Olympics. The question why the voice of opponents is heard more easily is out of scope of this study, but I feel it is a very fruitful line of future research on the Olympics. Such research could also shed light on the effects of different campaign stimuli that supposedly support openness towards arguments of supporters and also opponents of hosting the Olympics. To mitigate inference problems when analyzing treatment and effect in such studies and to complement the general survey focus of turnout research (Green et al., 2013), I believe that a stronger reliance on experiments could complement future turnout research.

4.5 Conclusion

Referenda have become a common practice when cities in Western democracies intend to host the Olympics. While there is research explaining people's support for hosting the Olympics at referenda, there is no research explaining people's turnout decision at Olympic referenda. However, low voter turnout at Olympic referenda can have severe consequences: it can change the referendum outcome, lower the acceptance of referendum results among the population, and lead to a misrepresentation of minorities.

This study is therefore the first to address the topic of voter turnout at Olympic referenda. Integrating theory from the general turnout literature with theory on the Olympics, I develop the Olympic Referenda Model and derive hypotheses on the drivers of voter turnout at Olympic referenda. I test the hypotheses using a unique population-representative data set with responses from 12,000 participants across the United States and eleven European countries. The results show, for example, that polarization drives voter turnout, opponents of hosting the Olympics have a stronger effect on voter turnout than supporters, and that social and economic motivations that increase support for hosting the Olympics do not automatically increase turnout at Olympic referenda. I elaborate on the practical implications of these findings for future applicant cities, particularly for their campaigning efforts.

Summarizing his impression of the multitude of theories and variables in the general turnout literature, Geys (2006a, p. 29) succinctly notes that “all roads may eventually lead to Rome”. For the specific context of Olympic referenda, I hope to support other researchers with the presented model and empirical findings in prioritizing among and paving the roads for fruitful future research.

Appendix 4a – Measurement of independent variables

Independent variable	Hypothesis	Description and response format	Reference
Rational choice			
Support	H1	‘I am in support of hosting the Olympics in [country].’ (1 ‘strongly disagree’, 2 ‘disagree’, 3 ‘neither/nor’, 4 ‘agree’, 5 ‘strongly agree’)	Builds on studies on the provision of public goods (Kahneman et al., 1993)
<i>Economic motivation</i>		‘Personally, it is important to me that...’ (1 ‘strongly disagree’, 2 ‘disagree’, 3 ‘neither/nor’, 4 ‘agree’, 5 ‘strongly agree’)	Uses variables based on (Streicher et al., 2017b)
Tax	H2	‘...no extra costs to the taxpayers are incurred by hosting the Olympics in [country].’	see above
Transparency	H2	‘...there is transparency in the total expenditure and the intended purpose of the funds that will be spent relating to the Olympics in [country].’	see above
Fairshare	H2	‘...revenue and expenditure relating to the Olympics will be distributed fairly among the public sector and the sport federations.’	see above
Economic impulses	H2	‘...the [country] population benefits permanently from economic impulses, which result from hosting the Olympics.’	see above
Infrastructure	H2	‘...a sustainable concept for the subsequent use of the infrastructure created for the Olympics exists.’	see above
<i>Social motivation</i>		‘Personally, it is important to me that...’ (1 ‘strongly disagree’, 2 ‘disagree’, 3 ‘neither/nor’, 4 ‘agree’, 5 ‘strongly agree’)	Uses variables based on (Streicher et al., 2017b)
Community	H2	‘...the sense of community in [country] will be strengthened by hosting the Olympics.’	see above
Reputation	H2	‘...the [country]’s international reputation will be strengthened by hosting the Olympics.’	see above
Sportsculture	H2	‘...the sports culture in [country] will be strengthened by hosting the Olympics.’	see above
Importance	H3	‘Hosting the Olympics in the USA is very important to me.’ (1 ‘strongly disagree’, 2 ‘disagree’, 3 ‘neither/nor’, 4 ‘agree’, 5 ‘strongly agree’)	Turnout varies with the importance of an election (Franklin, 1999)
Delegation	H4	‘Personally, it is important to me that elected politicians and not the [country] population decide whether the Olympics will be held in [country] or not.’ (1 ‘strongly disagree’, 2 ‘disagree’, 3 ‘neither/nor’, 4 ‘agree’, 5 ‘strongly agree’)	Voters often delegate their vote to the better informed (Geys, 2006a)
Psychological			
Optimism	H5	“Please rate your opinion on a scale from: 1 ‘I disagree a lot’ to 5 ‘I agree a lot’:” ‘In uncertain times, I usually expect the best.’ ‘If something can go wrong for me, it will.’ ‘I’m always optimistic about my future.’ ‘I hardly ever expect things to go my way.’ ‘I rarely count on good things happening to me.’ ‘Overall, I expect more good things to happen to me than bad.’ (1 ‘strongly disagree’, 2 ‘disagree’, 3 ‘neither/nor’, 4 ‘agree’, 5 ‘strongly agree’)	Builds on well-established Life Orientation Test-Revised (LOT-R) by Scheier et al. (1994)

Appendix 4b – Measurement of independent variables

Independent variable	Hypothesis	Description and response format	Reference
Mobilization			
Considersupp	H9	‘If Olympia supporters provide me with arguments relating to the Olympics in [country], I would take them into consideration.’ (1 ‘strongly disagree’, 2 ‘disagree’, 3 ‘neither/nor’, 4 ‘agree’, 5 ‘strongly agree’)	Draws on findings that informed citizens are more likely to vote (Meffert, Huber, Gschwend, & Pappi, 2011) and that supporters as a lobby group are an important inform. source (Preuss, 2004)
Consideropp	H10	‘If Olympia opponents provide me with arguments relating to the Olympics in [country], I would take them into consideration.’ (1 ‘strongly disagree’, 2 ‘disagree’, 3 ‘neither/nor’, 4 ‘agree’, 5 ‘strongly agree’)	see above
Considerfracq	H11	‘If my friends/acquaintances provide me with pro and contra arguments relating to the Olympics in the USA, I would take them into consideration.’ (1 ‘strongly disagree’, 2 ‘disagree’, 3 ‘neither/nor’, 4 ‘agree’, 5 ‘strongly agree’)	Draws on finding that opinion on the Olympics is influenced by friends and neighbors (Hiller & Wanner, 2011)
Resource			
Age	H9	‘How old are you?’ (‘years’ was displayed next to the survey field)	-
Education	H10	‘What is the highest educational level that you have attained?’ ²³	Degree names for each country provided by our survey partner Nielsen
Household net income	H11	‘What is the yearly net income in your entire household?’ (explanation on response options see education)	Income categories provided by our survey partner Nielsen
Gender	H12	‘Please specify your gender.’ (Female/male; male coded as 1 for the analysis in this study)	-
Pride	H13	‘I would be proud to be a citizen of a country that hosts the Olympic Games.’ (1 ‘strongly disagree’, 2 ‘disagree’, 3 ‘neither/nor’, 4 ‘agree’, 5 ‘strongly agree’)	Builds on finding that sports/sporting events can foster pride among population segments (Hallmann, Breuer, & Kühnreich, 2013; Pawlowski, Downward, & Rasciute, 2014)
Sportconsump	H14	‘How many times per week do you follow sports news in the media?’ (‘Daily’, ‘6 times per week’, ‘5 times per week’, ‘4 times per week’, ‘3 times per week’, ‘2 times per week’, ‘Once a week’, ‘Less than once a week’, ‘I do not follow any sports in the media’)	Draws on finding that media exposure can influence voter turnout (Gerber et al., 2009)

²³ Response options are based on the different educational systems in each country. To allow for comparisons, responses are transformed into a low, medium and high format.

Paper III – Referenda on hosting the Olympics: What drives voter turnout?
Appendix

Appendix 5 – Overview: comparison of alternative models

	All countries		AT		CH		ESP		FRA		GER		GRE	
Model component to be varied (linear to quadratic to cubic)	Support	Optimism	Support	Optimism	Support	Optimism	Support	Optimism	Support	Optimism	Support	Optimism	Support	Optimism
Significance of support/optimism regression coefficients														
Linear model	x	✓	x	x	x	x	x	x	x	x	x	x	✓	x
Quadratic model	✓	✓	✓	x	✓	x	✓	✓	✓	✓	✓	x	✓	x
Cubic Model	✓	x	✓	x	x	x	✓	x	x	x	x	x	x	x
Adjusted R²														
Linear model	0.184	0.210	0.207	0.229	0.227	0.257	0.170	0.187	0.139	0.149	0.191	0.200	0.125	0.145
Quadratic model	0.213	0.213	0.229	0.229	0.257	0.257	0.198	0.198	0.153	0.153	0.199	0.199	0.144	0.144
Cubic model	0.213	0.213	0.231	0.228	0.256	0.257	0.205	0.197	0.153	0.152	0.199	0.199	0.144	0.144

	IT		NOR		POL		SWE		UK		USA	
Model component to be varied (linear to quadratic to cubic)	Support	Optimism	Support	Optimism	Support	Optimism	Support	Optimism	Support	Optimism	Support	Optimism
Significance of support/optimism regression coefficients												
Linear model	x	x	✓	x	x	x	✓	x	✓	x	x	✓
Quadratic model	✓	✓	✓	x	✓	x	✓	x	✓	✓	✓	✓
Cubic Model	x	x	x	x	x	x	✓	x	x	x	x	x
Adjusted R²												
Linear model	0.120	0.130	0.267	0.347	0.219	0.247	0.212	0.232	0.206	0.227	0.322	0.330
Quadratic model	0.132	0.132	0.346	0.346	0.247	0.247	0.235	0.235	0.232	0.232	0.338	0.338
Cubic model	0.133	0.133	0.347	0.346	0.246	0.247	0.238	0.235	0.231	0.232	0.337	0.338

Notes: Details on the model comparisons can be found in Appendices 6a-c and 7a-c.
Country abbreviations: AT = Austria, CH = Switzerland, ESP = Spain, FRA = France, GER = Germany, GRE = Greece, IT = Italy, NOR = Norway, POL = Poland, SWE = Sweden, UK = United Kingdom and USA = United States of America.

Paper III – Referenda on hosting the Olympics: What drives voter turnout?
Appendix

Appendix 6a –Comparison of alternative support models

Variables	All countries			AT			CH			ESP			FRA		
	Linear	Quadratic	Cubic	Linear	Quadratic	Cubic	Linear	Quadratic	Cubic	Linear	Quadratic	Cubic	Linear	Quadratic	Cubic
Rational choice factors															
Support	0.010	-0.671***	-1.095***	0.028	-0.599***	-1.446**	0.027	-0.642***	-0.962*	0.031	-0.689***	-2.230***	0.012	-0.495***	-1.093†
Support##Support	-	0.113***	0.269***	-	0.110***	0.430*	-	0.113***	0.233	-	0.116***	0.673***	-	0.087***	0.306
Support##Support##Support	-	-	-0.017**	-	-	-0.035†	-	-	-0.013	-	-	-0.059**	-	-	-0.024
Economic motivation															
Tax	0.025**	0.024**	0.024**	-0.051	-0.048	-0.051	0.037	0.046†	0.045†	0.043	0.041	0.041	0.015	0.014	0.013
Transparency	0.072***	0.065***	0.066***	0.170***	0.163***	0.165***	0.134**	0.130**	0.132**	0.115*	0.101*	0.102*	0.078†	0.067	0.067
Fairshare	0.026*	0.024*	0.023*	0.103*	0.092*	0.090*	-0.010	-0.015	-0.015	0.042	0.036	0.035	-0.007	-0.010	-0.011
Econimpulses	-0.008	-0.011	-0.011	0.039	0.036	0.036	0.023	0.009	0.009	-0.021	-0.030	-0.021	-0.007	-0.001	-0.002
Infrastructure	0.101***	0.096***	0.097***	0.096*	0.105*	0.109*	0.141***	0.147***	0.148***	0.021	0.026	0.020	0.150**	0.136*	0.138*
Social motivation															
Community	-0.031*	-0.026*	-0.026*	-0.028	-0.015	-0.014	-0.009	0.005	0.004	-0.028	-0.028	-0.031	-0.037	-0.033	-0.033
Reputation	0.022	0.027†	0.027†	-0.062	-0.056	-0.055	0.033	0.037	0.038	0.070	0.080	0.087†	-0.003	0.008	0.010
Sportsculture	0.011	0.021	0.022†	0.043	0.053	0.057	-0.041	-0.020	-0.020	-0.043	-0.034	-0.032	0.063	0.067	0.069
Importance	0.070***	0.045***	0.044***	0.071*	0.04	0.039	0.063*	0.033	0.033	0.074*	0.040	0.041	0.117**	0.095**	0.092*
Delegation	-0.053***	-0.044***	-0.044***	-0.102***	-0.104***	-0.100***	-0.092***	-0.078**	-0.077**	-0.021	-0.017	-0.021	-0.027	-0.024	-0.022
Psychological factors															
Optimism	-0.648***	-0.474***	-0.478***	-0.372	-0.224	-0.201	-0.487	-0.277	-0.313	-1.323***	-1.243***	-1.297***	-0.906*	-0.794*	-0.813*
Optimism##Optimism	0.108***	0.080***	0.080***	0.057	0.033	0.030	0.080	0.048	0.053	0.204***	0.190***	0.198***	0.156**	0.138*	0.141*
Mobilization factors															
Considersupp	0.007	0.015	0.016	-0.067	-0.048	-0.049	-0.032	-0.031	-0.030	-0.012	0.016	0.021	0.024	0.020	0.026
Consideropp	0.080***	0.085***	0.084***	0.080	0.071	0.075	0.116**	0.113**	0.113**	0.112*	0.111*	0.112*	0.140**	0.155***	0.151**
Considerfracq	0.063***	0.057***	0.057***	0.197***	0.187***	0.183***	0.058	0.062	0.061	-0.015	-0.017	-0.019	-0.022	-0.024	-0.024
Resource factors															
Age	0.007***	0.006***	0.006***	0.005†	0.004	0.004	0.008***	0.008***	0.007***	0.005†	0.005†	0.005†	0.000	0.001	0.001
Gender (male = 1)	0.053**	0.029	0.029	0.083	0.07	0.059	0.050	0.023	0.020	-0.047	-0.083	-0.084	0.043	0.031	0.026
Education															
Medium	0.121***	0.129***	0.129***	0.188†	0.185†	0.185†	0.010	0.027	0.028	0.331**	0.331**	0.324**	0.118	0.127	0.126
High	0.217***	0.219***	0.219***	0.044	0.061	0.062	0.147*	0.159*	0.158*	0.379***	0.363**	0.361**	0.096	0.094	0.093
Household net income															
Medium	0.085***	0.078***	0.078***	0.038	0.036	0.032	0.126†	0.117†	0.118†	0.023	0.009	0.009	0.035	0.057	0.055
High	0.101***	0.090***	0.090***	0.136	0.149†	0.146†	0.112	0.103	0.103	0.042	0.050	0.044	0.112	0.113	0.114
Nationalpride	0.063***	0.062***	0.062***	-0.039	-0.046	-0.049	0.023	0.019	0.018	0.161***	0.147***	0.139**	0.049	0.041	0.04
Sportconsump	0.102***	0.087***	0.086***	0.121***	0.114***	0.115***	0.129***	0.111***	0.111***	0.055†	0.033	0.030	0.090**	0.077*	0.078*
Adjusted R²	0.184	0.213	0.213	0.207	0.229	0.231	0.227	0.257	0.256	0.17	0.198	0.205	0.139	0.153	0.153

Notes: *** represents statistical significance at the 0.1% (p < .001), ** at the 1% (p < .01), * at the 5% (p < .05) and † at the 10% (p < .1) level.

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Paper III – Referenda on hosting the Olympics: What drives voter turnout?
Appendix

Appendix 6b – Comparison of alternative support models

Variables	GER			GRE			IT			NOR			POL		
	Linear	Quadratic	Cubic	Linear	Quadratic	Cubic	Linear	Quadratic	Cubic	Linear	Quadratic	Cubic	Linear	Quadratic	Cubic
Rational choice factors															
Support	0.009	-0.372**	-0.377	0.073†	-0.498***	-0.732	-0.001	-0.417***	0.108	-0.096**	-1.273***	-1.686***	0.003	-0.717***	-0.381
Support##Support	-	0.065***	0.067	-	0.096***	0.184	-	0.070***	-0.125	-	0.202***	0.361*	-	0.112***	-0.006
Support##Support##Support	-	-	0.000	-	-	-0.010	-	-	0.021	-	-	-0.018	-	-	0.012
Economic motivation															
Tax	0.049	0.049	0.049	0.003	0.001	0.001	0.051	0.048	0.050	0.145***	0.129***	0.128***	0.017	0.007	0.007
Transparency	0.041	0.039	0.039	-0.023	-0.028	-0.027	0.144**	0.141**	0.138**	0.096**	0.078**	0.077**	0.104*	0.081*	0.082*
Fairshare	0.072†	0.065†	0.065†	-0.027	-0.028	-0.029	0.061	0.060	0.060	0.016	0.020	0.019	0.033	0.028	0.028
Econimpulses	-0.024	-0.030	-0.030	-0.035	-0.026	-0.026	-0.069†	-0.072†	-0.073*	0.004	-0.003	-0.002	0.058	0.062	0.063
Infrastructure	0.177***	0.173***	0.173***	0.034	0.034	0.033	0.129**	0.126**	0.123**	0.053	0.040	0.041	0.059	0.067	0.064
Social motivation															
Community	0.016	0.024	0.024	-0.024	-0.027	-0.026	-0.119**	-0.125**	-0.123**	-0.008	-0.021	-0.020	-0.017	-0.007	-0.008
Reputation	0.025	0.029	0.029	0.105*	0.102*	0.102*	-0.006	-0.001	0.001	-0.002	0.006	0.004	-0.057	-0.052	-0.051
Sportsculture	-0.035	-0.023	-0.023	0.032	0.032	0.031	0.030	0.042	0.039	0.049	0.051	0.054	0.018	0.011	0.008
Importance	0.095**	0.068*	0.068*	0.059†	0.053	0.054	0.000	-0.010	-0.011	0.205***	0.149***	0.150***	0.069*	0.046	0.046
Delegation	-0.072**	-0.066*	-0.066*	-0.027	-0.02	-0.020	-0.007	-0.007	-0.008	-0.127***	-0.091***	-0.092***	-0.032	-0.025	-0.025
Psychological factors															
Optimism	0.072	0.131	0.131	0.062	0.288	0.295	-0.512*	-0.428†	-0.428†	-0.928*	-0.315	-0.316	-0.431	-0.220	-0.222
Optimism##Optimism	-0.001	-0.011	-0.011	0.003	-0.033	-0.034	0.084*	0.071†	0.071†	0.142*	0.043	0.043	0.074	0.042	0.042
Mobilization factors															
Considersupp	-0.016	-0.004	-0.004	-0.020	-0.020	-0.018	0.048	0.055	0.054	0.058	0.076*	0.077*	0.041	0.047	0.045
Consideropp	0.118*	0.118*	0.118*	0.080†	0.095*	0.094*	-0.015	-0.018	-0.016	0.126**	0.130***	0.128**	0.076*	0.077*	0.077*
Considerfracq	-0.001	-0.008	-0.008	0.042	0.031	0.032	0.048	0.042	0.041	-0.041	-0.024	-0.023	0.056	0.058	0.058
Resource factors															
Age	0.008**	0.008**	0.008**	0.010**	0.009**	0.009**	0.001	0.001	0.001	0.008***	0.007***	0.007***	0.001	0.001	0.001
Gender (male = 1)	0.191**	0.178**	0.178**	0.115†	0.095	0.094	-0.079	-0.076	-0.077	0.126*	0.063	0.064	0.072	0.047	0.047
Education															
Medium	0.000	-0.002	-0.002	0.161	0.150	0.150	0.125	0.099	0.100	0.191	0.188	0.189	0.007	0.067	0.062
High	0.167	0.155	0.155	0.315	0.305	0.304	0.175	0.147	0.152	0.343*	0.343**	0.345**	0.057	0.109	0.105
Household net income															
Medium	0.116	0.109	0.109	0.167*	0.170*	0.170*	0.012	0.010	0.013	0.080	0.082	0.081	0.116†	0.113†	0.114†
High	0.165†	0.154†	0.154†	-0.178	-0.158	-0.161	-0.046	-0.055	-0.056	0.143†	0.105	0.108	0.166*	0.159*	0.160*
Nationalpride	0.066	0.065	0.065	0.039	0.046	0.047	0.104**	0.115**	0.114**	0.033	0.056	0.058	0.108*	0.114*	0.115*
Sportconsump	0.053	0.046	0.046	0.098**	0.087**	0.087**	0.072**	0.061*	0.062*	0.147***	0.115***	0.115***	0.146***	0.130***	0.130***
Adjusted R²	0.191	0.199	0.199	0.125	0.144	0.144	0.120	0.132	0.133	0.267	0.346	0.347	0.219	0.247	0.246

Notes: *** represents statistical significance at the 0.1% (p < .001), ** at the 1% (p < .01), * at the 5% (p < .05) and † at the 10% (p < .1) level.

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Paper III – Referenda on hosting the Olympics: What drives voter turnout?
Appendix

Appendix 6c –Comparison of alternative support models

Variables	SWE			UK			USA		
	Linear	Quadratic	Cubic	Linear	Quadratic	Cubic	Linear	Quadratic	Cubic
Rational choice factors									
Support	0.073†	-0.595***	-1.665**	0.085†	-0.597***	-0.854	0.028	-0.647***	-0.702
Support##Support	-	0.111***	0.508**	-	0.105***	0.198	-	0.097***	0.116
Support##Support##Support	-	-	-0.043*	-	-	-0.01	-	-	-0.002
Economic motivation									
Tax	0.073*	0.077*	0.078*	0.032	0.035	0.034	-0.013	-0.016	-0.016
Transparency	0.120**	0.112**	0.113**	-0.002	0.009	0.010	0.056†	0.054†	0.054†
Fairshare	0.162***	0.155***	0.151***	-0.015	-0.021	-0.021	-0.008	0.006	0.006
Econimpulses	-0.025	-0.025	-0.024	0.07	0.05	0.048	-0.049	-0.045	-0.045
Infrastructure	0.111**	0.109**	0.110**	0.066	0.061	0.061	0.134***	0.134***	0.135***
Social motivation									
Community	-0.041	-0.027	-0.029	-0.014	0.005	0.006	-0.011	-0.018	-0.018
Reputation	-0.039	-0.029	-0.028	0.093†	0.093†	0.092†	0.023	0.025	0.025
Sportsculture	0.006	0.010	0.016	-0.056	-0.038	-0.036	0.053	0.065	0.065
Importance	0.002	-0.006	-0.005	-0.029	-0.039	-0.039	-0.015	-0.025	-0.025
Delegation	-0.098***	-0.089**	-0.089**	0.001	0.002	0.002	-0.009	-0.006	-0.006
Psychological factors									
Optimism	-0.732†	-0.583	-0.572	-0.637**	-0.475*	-0.482*	-0.667**	-0.569**	-0.568**
Optimism##Optimism	0.123*	0.101†	0.100†	0.110***	0.082*	0.083*	0.117***	0.104***	0.104***
Mobilization factors									
Considersupp	-0.001	-0.009	-0.007	0.117†	0.112†	0.111†	0.080	0.076	0.076
Consideropp	0.013	0.025	0.019	0.020	0.029	0.028	0.043	0.048	0.048
Considerfracq	0.086	0.096†	0.100†	0.055	0.051	0.051	0.142**	0.138**	0.138**
Resource factors									
Age	0.005†	0.004†	0.004	0.009***	0.008***	0.008***	0.005*	0.005*	0.005*
Gender (male = 1)	0.000	-0.034	-0.027	0.013	-0.021	-0.018	0.031	0.000	0.000
Education									
Medium	-0.031	0.013	0.017	0.186	0.192	0.191	0.004	0.014	0.014
High	0.158	0.180	0.191	0.295*	0.296*	0.294*	0.176	0.204	0.204
Household net income									
Medium	0.058	0.036	0.032	0.108†	0.091	0.092	0.05	0.045	0.045
High	0.072	0.039	0.033	0.022	0.002	0.004	0.100	0.099	0.099
Nationalpride	0.104*	0.089*	0.087*	0.061	0.059	0.059	0.232***	0.222***	0.222***
Sportconsump	0.119***	0.097**	0.098**	0.075**	0.071**	0.071**	0.076**	0.072**	0.072**
Adjusted R²	0.212	0.235	0.238	0.206	0.232	0.231	0.322	0.338	0.337

Notes: *** represents statistical significance at the 0.1% (p < .001), ** at the 1% (p < .01), * at the 5% (p < .05) and † at the 10% (p < .1) level.

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Paper III – Referenda on hosting the Olympics: What drives voter turnout?
Appendix

Appendix 7a –Comparison of alternative optimism models

Variables	All countries			AT			CH			ESP			FRA		
	Linear	Quadratic	Cubic	Linear	Quadratic	Cubic	Linear	Quadratic	Cubic	Linear	Quadratic	Cubic	Linear	Quadratic	Cubic
Rational choice factors															
Support	-0.693***	-0.671***	-0.671***	-0.607***	-0.599***	-0.600***	-0.652***	-0.642***	-0.638***	-0.707***	-0.689***	-0.689***	-0.520***	-0.495***	-0.496***
Support##Support	0.117***	0.113***	0.113***	0.111***	0.110***	0.110***	0.115***	0.113***	0.113***	0.120***	0.116***	0.116***	0.090***	0.087***	0.087***
Economic motivation															
Tax	0.024**	0.024**	0.024**	-0.048	-0.048	-0.048	0.045†	0.046†	0.045†	0.037	0.041	0.041	0.016	0.014	0.015
Transparency	0.067***	0.065***	0.065***	0.165***	0.163***	0.163***	0.131**	0.130**	0.132**	0.115*	0.101*	0.102*	0.071	0.067	0.067
Fairshare	0.024*	0.024*	0.024*	0.092*	0.092*	0.092*	-0.014	-0.015	-0.015	0.037	0.036	0.035	-0.010	-0.010	-0.011
Econimpulses	-0.012	-0.011	-0.011	0.035	0.036	0.036	0.010	0.009	0.009	-0.023	-0.030	-0.030	0.001	-0.001	-0.001
Infrastructure	0.099***	0.096***	0.096***	0.105*	0.105*	0.105*	0.149***	0.147***	0.150***	0.024	0.026	0.026	0.138*	0.136*	0.136*
Social motivation															
Community	-0.027*	-0.026*	-0.026*	-0.016	-0.015	-0.014	0.005	0.005	0.004	-0.031	-0.028	-0.028	-0.028	-0.033	-0.033
Reputation	0.028*	0.027†	0.027*	-0.053	-0.056	-0.056	0.037	0.037	0.035	0.078	0.080	0.081	0.007	0.008	0.009
Sportsculture	0.022†	0.021	0.021	0.052	0.053	0.053	-0.020	-0.020	-0.019	-0.030	-0.034	-0.034	0.072	0.067	0.069
Importance	0.042***	0.045***	0.045***	0.039	0.040	0.040	0.032	0.033	0.034	0.031	0.040	0.039	0.091*	0.095**	0.096**
Delegation	-0.048***	-0.044***	-0.044***	-0.105***	-0.104***	-0.103***	-0.080**	-0.078**	-0.078**	-0.023	-0.017	-0.017	-0.036	-0.024	-0.023
Psychological factors															
Optimism	0.043**	-0.474***	-0.884**	-0.002	-0.224	-0.764	0.053	-0.277	1.561	0.016	-1.243***	-0.772	0.053	-0.794*	0.052
Optimism##Optimism	-	0.080***	0.218*	-	0.033	0.211	-	0.048	-0.515	-	0.190***	0.036	-	0.138*	-0.163
Optimism##Optimism##Optimism	-	-	-0.015	-	-	-0.019	-	-	0.055	-	-	0.016	-	-	0.034
Mobilization factors															
Considersupp	0.014	0.015	0.015	-0.049	-0.048	-0.049	-0.032	-0.031	-0.032	0.014	0.016	0.016	0.019	0.020	0.017
Consideropp	0.084***	0.085***	0.085***	0.072	0.071	0.072	0.113**	0.113**	0.113**	0.105*	0.111*	0.111*	0.160***	0.155***	0.157***
Considerfracq	0.058***	0.057***	0.057***	0.187***	0.187***	0.187***	0.063	0.062	0.063	-0.007	-0.017	-0.018	-0.028	-0.024	-0.023
Resource factors															
Age	0.006***	0.006***	0.006***	0.004	0.004	0.004	0.007**	0.008***	0.007**	0.005†	0.005†	0.005†	0.001	0.001	0.001
Gender (male = 1)	0.027	0.029	0.029	0.069	0.070	0.069	0.024	0.023	0.020	-0.094	-0.083	-0.084	0.029	0.031	0.032
Education															
Medium	0.131***	0.129***	0.129***	0.188†	0.185†	0.184†	0.030	0.027	0.025	0.328**	0.331**	0.332**	0.126	0.127	0.126
High	0.222***	0.219***	0.219***	0.065	0.061	0.059	0.158*	0.159*	0.159*	0.368**	0.363**	0.365**	0.099	0.094	0.093
Household net income															
Medium	0.076***	0.078***	0.078***	0.035	0.036	0.037	0.116†	0.117†	0.121†	0.013	0.009	0.010	0.041	0.057	0.058
High	0.091***	0.090***	0.090***	0.150†	0.149†	0.151†	0.111	0.103	0.103	0.034	0.050	0.051	0.113	0.113	0.110
Nationalpride	0.061***	0.062***	0.062***	-0.046	-0.046	-0.046	0.018	0.019	0.018	0.146***	0.147***	0.147***	0.041	0.041	0.041
Sportconsump	0.085***	0.087***	0.087***	0.112***	0.114***	0.113***	0.109***	0.111***	0.110***	0.034	0.033	0.033	0.075*	0.077*	0.078*
Adjusted R²	0.210	0.213	0.213	0.229	0.229	0.228	0.257	0.257	0.257	0.187	0.198	0.197	0.149	0.153	0.152

Notes: *** represents statistical significance at the 0.1% (p < .001), ** at the 1% (p < .01), * at the 5% (p < .05) and † at the 10% (p < .1) level.

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Paper III – Referenda on hosting the Olympics: What drives voter turnout?
Appendix

Appendix 7b – Comparison of alternative optimism models

Variables	GER			GRE			IT			NOR			POL		
	Linear	Quadratic	Cubic	Linear	Quadratic	Cubic	Linear	Quadratic	Cubic	Linear	Quadratic	Cubic	Linear	Quadratic	Cubic
Rational choice factors															
Support	-0.371**	-0.372**	-0.372**	-0.487***	-0.498***	-0.494***	-0.436***	-0.417***	-0.423***	-1.285***	-1.273***	-1.273***	-0.729***	-0.717***	-0.712***
Support##Support	0.065***	0.065***	0.065***	0.094***	0.096***	0.095***	0.073***	0.070***	0.071***	0.204***	0.202***	0.202***	0.114***	0.112***	0.112***
Economic motivation															
Tax	0.049	0.049	0.049	0.000	0.001	0.000	0.050	0.048	0.046	0.130***	0.129***	0.129***	0.007	0.007	0.005
Transparency	0.039	0.039	0.039	-0.029	-0.028	-0.030	0.145**	0.141**	0.142**	0.078**	0.078**	0.078**	0.081*	0.081*	0.078†
Fairshare	0.065†	0.065†	0.065†	-0.026	-0.028	-0.028	0.065†	0.060	0.059	0.020	0.020	0.020	0.029	0.028	0.030
Econimpulses	-0.030	-0.030	-0.030	-0.025	-0.026	-0.024	-0.072†	-0.072†	-0.072†	-0.003	-0.003	-0.003	0.062	0.062	0.061
Infrastructure	0.172***	0.173***	0.173***	0.034	0.034	0.036	0.128**	0.126**	0.122**	0.041	0.040	0.040	0.068	0.067	0.070
Social motivation															
Community	0.023	0.024	0.024	-0.026	-0.027	-0.027	-0.127**	-0.125**	-0.124**	-0.021	-0.021	-0.020	-0.008	-0.007	-0.006
Reputation	0.030	0.029	0.029	0.102*	0.102*	0.102*	-0.004	-0.001	0.000	0.007	0.006	0.006	-0.051	-0.052	-0.056
Sportsculture	-0.023	-0.023	-0.023	0.030	0.032	0.032	0.046	0.042	0.044	0.051	0.051	0.051	0.011	0.011	0.013
Importance	0.068*	0.068*	0.067*	0.053	0.053	0.052	-0.011	-0.010	-0.011	0.148***	0.149***	0.149***	0.046	0.046	0.046
Delegation	-0.065*	-0.066*	-0.066*	-0.020	-0.020	-0.020	-0.013	-0.007	-0.006	-0.093***	-0.091***	-0.092***	-0.026	-0.025	-0.024
Psychological factors															
Optimism	0.060	0.131	0.345	0.064	0.288	-1.271	0.014	-0.428†	-1.566†	-0.052	-0.315	0.524	0.062	-0.220	-2.203
Optimism##Optimism	-	-0.011	-0.083	-	-0.033	0.474	-	0.071†	0.470†	-	0.043	-0.248	-	0.042	0.658
Optimism##Optimism##Optimism	-	-	0.008	-	-	-0.052	-	-	-0.044	-	-	0.032	-	-	-0.061
Mobilization factors															
Considersupp	-0.004	-0.004	-0.004	-0.020	-0.020	-0.022	0.057	0.055	0.053	0.076*	0.076*	0.076*	0.047	0.047	0.044
Consideropp	0.118*	0.118*	0.118*	0.094*	0.095*	0.095*	-0.023	-0.018	-0.016	0.130***	0.130***	0.132***	0.075*	0.077*	0.078*
Considerfracq	-0.008	-0.008	-0.008	0.033	0.031	0.032	0.042	0.042	0.046	-0.025	-0.024	-0.025	0.061	0.058	0.059
Resource factors															
Age	0.008**	0.008**	0.008**	0.009**	0.009**	0.009**	0.001	0.001	0.000	0.007***	0.007***	0.007***	0.001	0.001	0.001
Gender (male = 1)	0.178**	0.178**	0.178**	0.096	0.095	0.100	-0.081	-0.076	-0.078	0.062	0.063	0.064	0.045	0.047	0.050
Education															
Medium	-0.003	-0.002	-0.002	0.149	0.150	0.156	0.101	0.099	0.097	0.188	0.188	0.190	0.062	0.067	0.059
High	0.154	0.155	0.155	0.303	0.305	0.315	0.147	0.147	0.148	0.344**	0.343**	0.344**	0.104	0.109	0.099
Household net income															
Medium	0.109	0.109	0.109	0.169*	0.170*	0.162*	0.001	0.010	0.010	0.082	0.082	0.084	0.117†	0.113†	0.112†
High	0.154†	0.154†	0.154†	-0.157	-0.158	-0.161	-0.058	-0.055	-0.056	0.102	0.105	0.105	0.167*	0.159*	0.154*
Nationalpride	0.065	0.065	0.065	0.047	0.046	0.045	0.117**	0.115**	0.115**	0.055	0.056	0.057	0.114*	0.114*	0.113*
Sportconsump	0.046	0.046	0.046	0.088**	0.087**	0.086**	0.059*	0.061*	0.060*	0.114***	0.115***	0.115***	0.128***	0.130***	0.130***
Adjusted R²	0.200	0.199	0.199	0.145	0.144	0.144	0.130	0.132	0.133	0.347	0.346	0.346	0.247	0.247	0.247

Notes: *** represents statistical significance at the 0.1% (p < .001), ** at the 1% (p < .01), * at the 5% (p < .05) and † at the 10% (p < .1) level.

Country abbreviations: AT = Austria, CH = Switzerland, ESP = Spain, FRA = France, GER = Germany, GRE = Greece, IT = Italy, NOR = Norway, POL = Poland, SWE = Sweden, UK = United Kingdom and USA = United States of America.

Paper III – Referenda on hosting the Olympics: What drives voter turnout?
Appendix

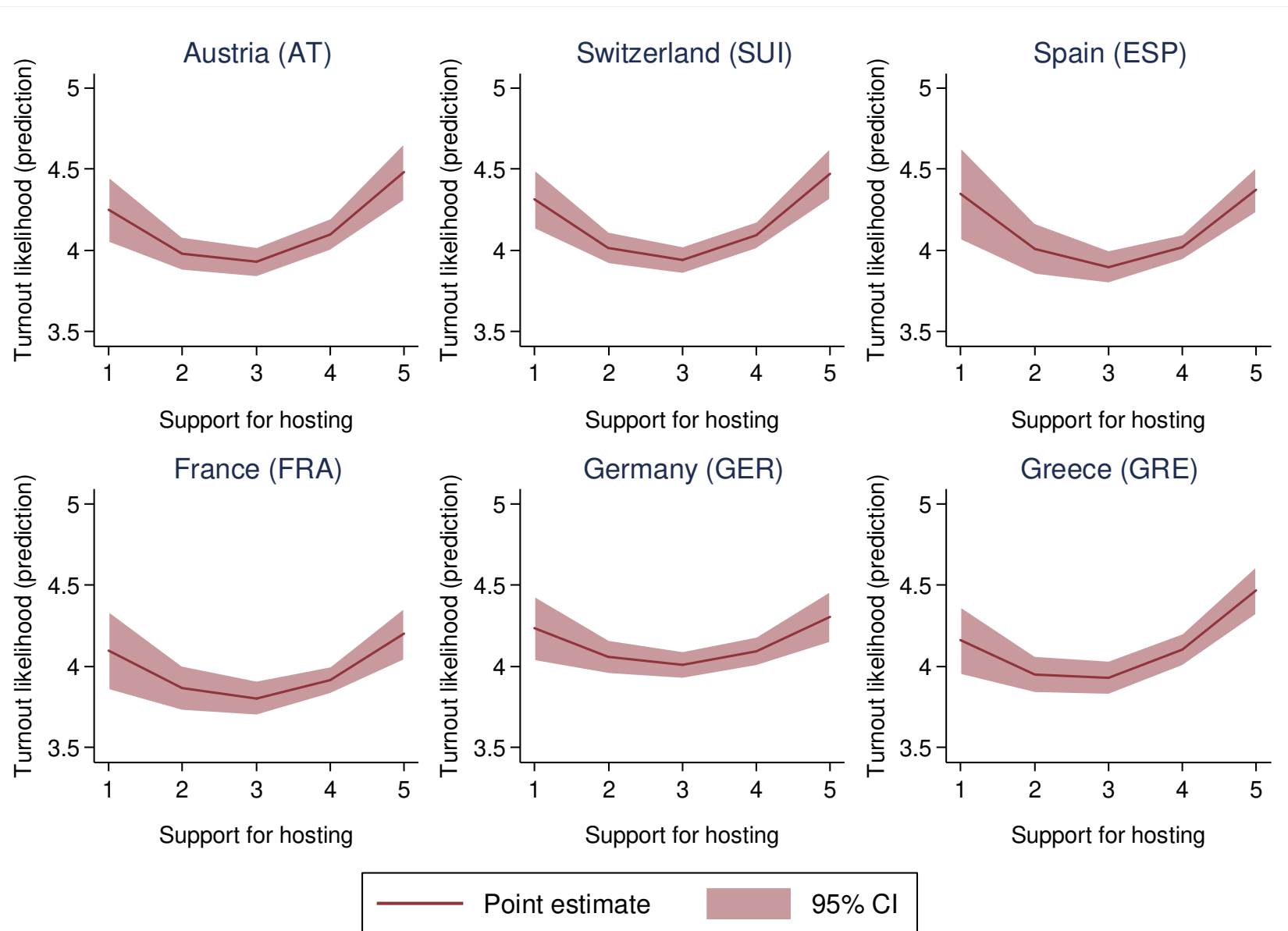
Appendix 7c – Comparison of alternative optimism models

Variables	SWE			UK			USA		
	Linear	Quadratic	Cubic	Linear	Quadratic	Cubic	Linear	Quadratic	Cubic
Rational choice factors									
Support	-0.616***	-0.595***	-0.596***	-0.640***	-0.597***	-0.597***	-0.686***	-0.647***	-0.649***
Support##Support	0.115***	0.111***	0.111***	0.112***	0.105***	0.105***	0.104***	0.097***	0.098***
Economic motivation									
Tax	0.075*	0.077*	0.078*	0.032	0.035	0.035	-0.021	-0.016	-0.018
Transparency	0.115**	0.112**	0.111**	0.006	0.009	0.009	0.058†	0.054†	0.054†
Fairshare	0.163***	0.155***	0.157***	-0.02	-0.021	-0.023	0.007	0.006	0.006
Econimpulses	-0.034	-0.025	-0.024	0.053	0.050	0.049	-0.044	-0.045	-0.047
Infrastructure	0.118**	0.109**	0.109**	0.069	0.061	0.060	0.142***	0.134***	0.137***
Social motivation									
Community	-0.030	-0.027	-0.028	-0.003	0.005	0.004	-0.021	-0.018	-0.019
Reputation	-0.027	-0.029	-0.031	0.094†	0.093†	0.095†	0.028	0.025	0.026
Sportsculture	0.010	0.010	0.012	-0.031	-0.038	-0.038	0.066	0.065	0.067†
Importance	-0.005	-0.006	-0.004	-0.048	-0.039	-0.039	-0.040	-0.025	-0.024
Delegation	-0.095***	-0.089**	-0.090**	0.000	0.002	0.001	-0.015	-0.006	-0.006
Psychological factors									
Optimism	0.074	-0.583	0.591	0.022	-0.475*	-1.368†	0.103**	-0.569**	-1.396†
Optimism##Optimism	-	0.101†	-0.290	-	0.082*	0.401	-	0.104***	0.388
Optimism##Optimism##Optimism	-	-	0.041	-	-	-0.036	-	-	-0.030
Mobilization factors									
Considersupp	-0.012	-0.009	-0.008	0.105	0.112†	0.114†	0.083	0.076	0.079
Consideropp	0.023	0.025	0.024	0.027	0.029	0.029	0.043	0.048	0.046
Considerfracq	0.094†	0.096†	0.094†	0.059	0.051	0.048	0.132**	0.138**	0.138**
Resource factors									
Age	0.005†	0.004†	0.005†	0.008***	0.008***	0.008***	0.005*	0.005*	0.004*
Gender (male = 1)	-0.042	-0.034	-0.035	-0.022	-0.021	-0.022	-0.005	0.000	-0.001
Education									
Medium	0.015	0.013	0.008	0.190	0.192	0.184	-0.007	0.014	0.016
High	0.189	0.180	0.177	0.297*	0.296*	0.289*	0.182	0.204	0.201
Household net income									
Medium	0.033	0.036	0.035	0.088	0.091	0.093	0.042	0.045	0.044
High	0.028	0.039	0.042	0.005	0.002	0.005	0.099	0.099	0.096
Nationalpride	0.087*	0.089*	0.090*	0.060	0.059	0.061	0.224***	0.222***	0.221***
Sportconsump	0.093**	0.097**	0.098**	0.070**	0.071**	0.071**	0.076**	0.072**	0.071**
Adjusted R²	0.232	0.235	0.235	0.227	0.232	0.232	0.330	0.338	0.338

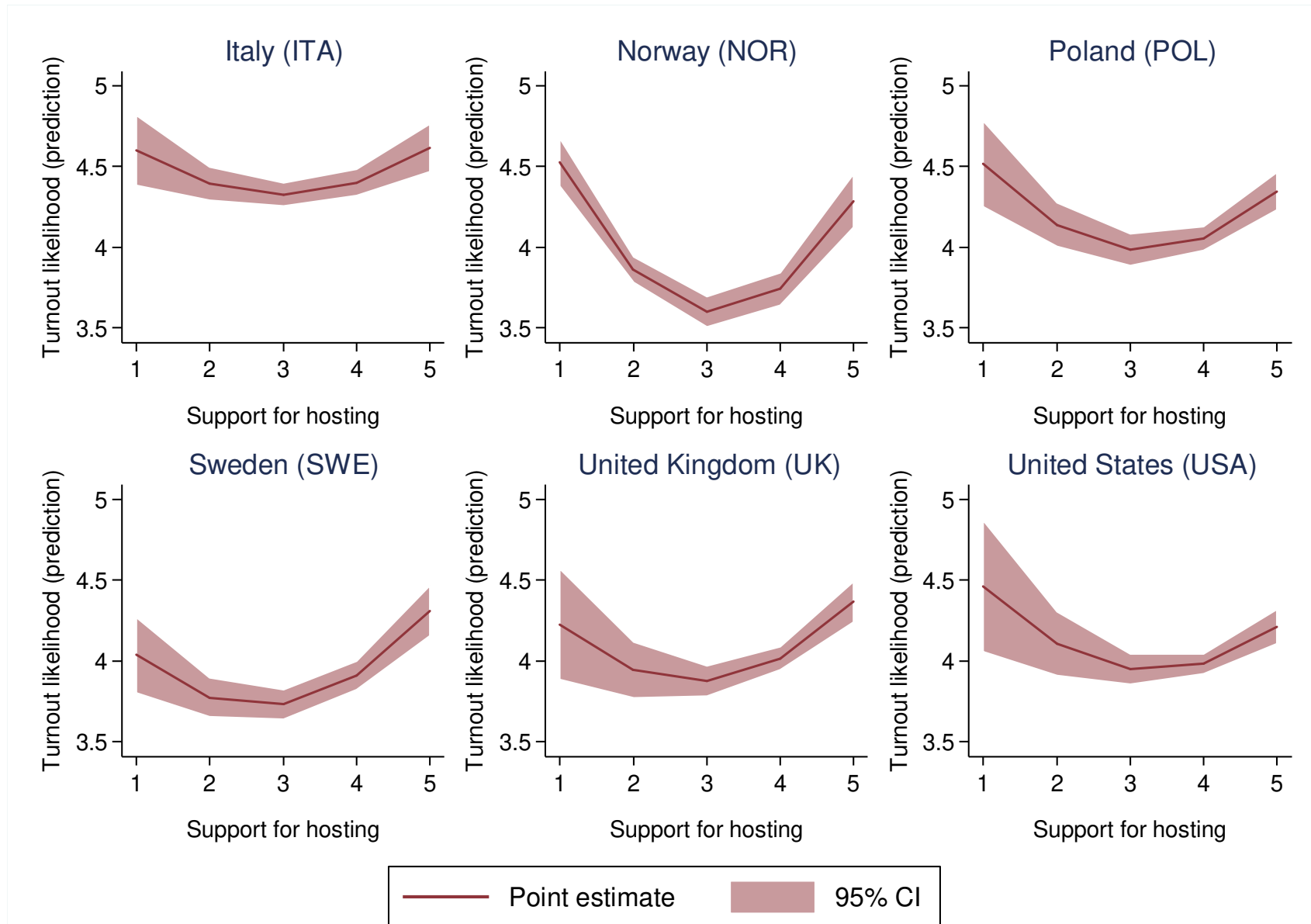
Notes: *** represents statistical significance at the 0.1% (p < .001), ** at the 1% (p < .01), * at the 5% (p < .05) and † at the 10% (p < .1) level.

Country abbreviations: AT = Austria, CH = Switzerland, ESP = Spain, FRA = France, GER = Germany, GRE = Greece, IT = Italy, NOR = Norway, POL = Poland, SWE = Sweden, UK = United Kingdom and USA = United States of America.

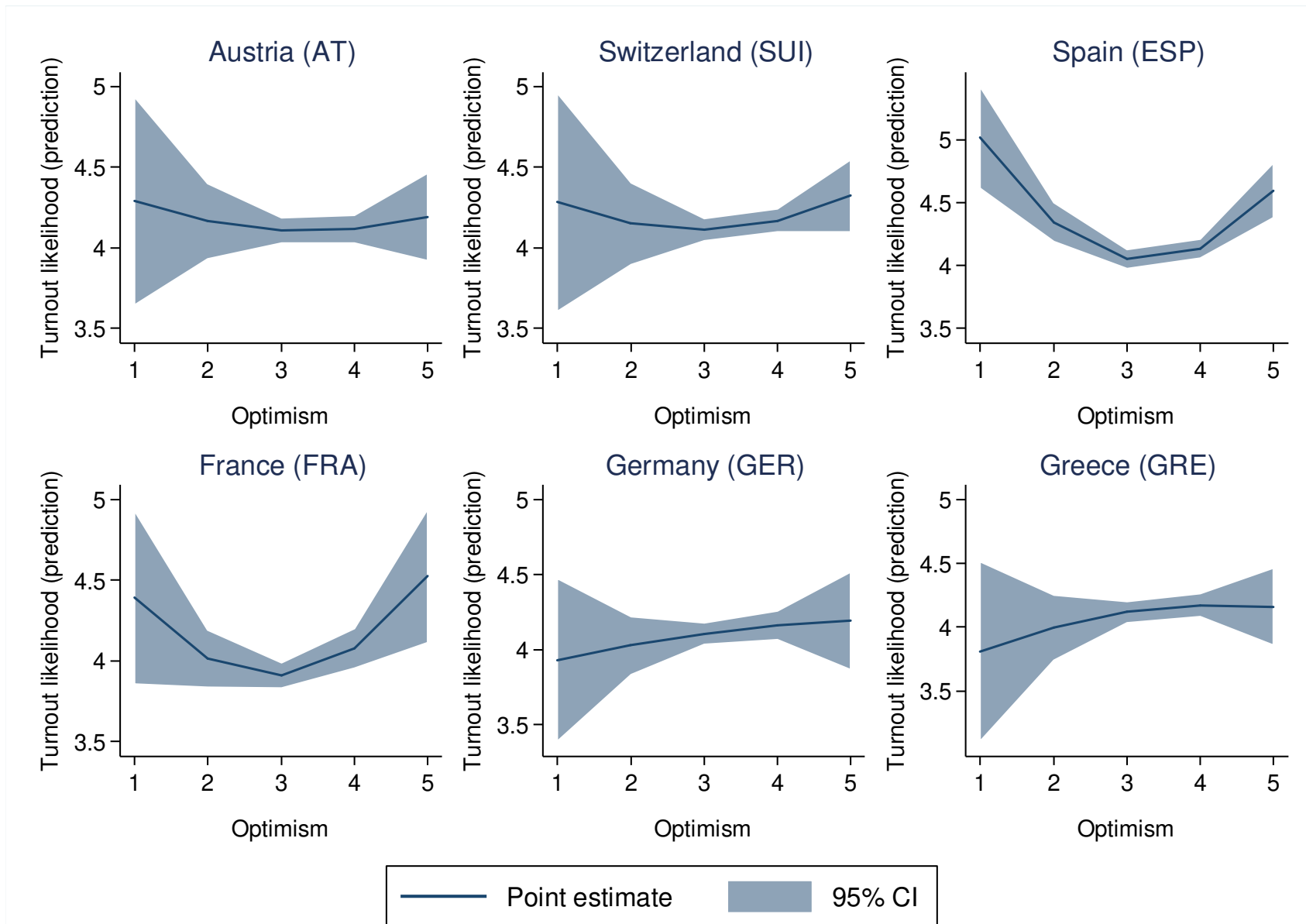
Appendix 8a – Quadratic effect of support on voter turnout per country



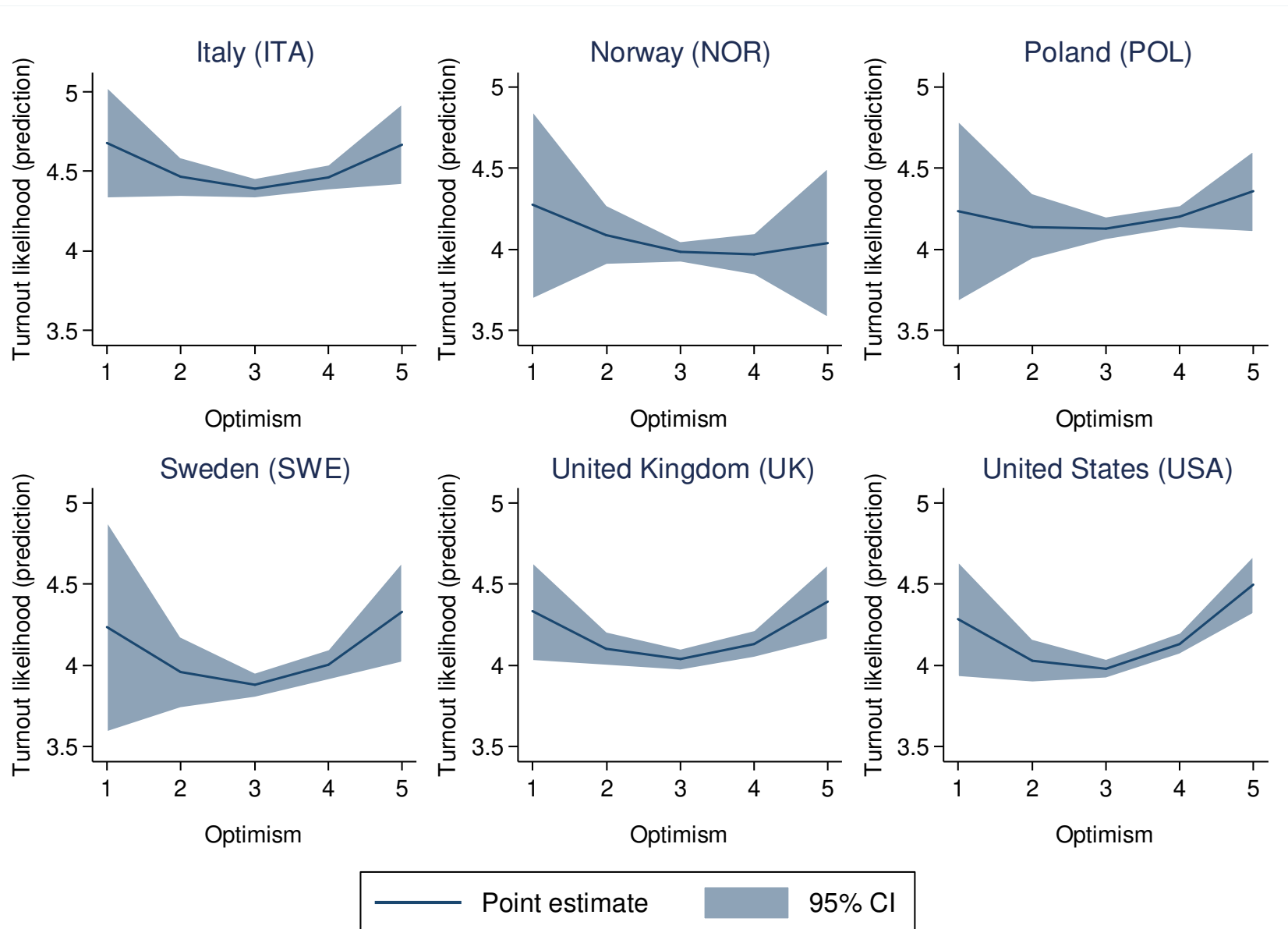
Appendix 8b – Quadratic effect of support on voter turnout per country



Appendix 9a – Quadratic effect of optimism on voter turnout per country



Appendix 9b – Quadratic effect of optimism on voter turnout per country



5 Conclusion

5.1 Overall summary

This dissertation's objective was to gain insight into how individuals decide on their support for hosting the Olympics at referenda and what determines their turnout at these referenda. In order to pursue this objective, I analyzed three theoretically relevant research questions:

Question I: To what extent do economic versus social factors influence individuals' voting behavior at referenda on hosting the Olympics?

Question II: How do the intuitive and deliberate mental systems of individuals interact when they decide at referenda on hosting the Olympics?

Question III: What are the determinants of individuals' voter turnout at referenda on hosting the Olympics?

These three research questions were addressed in three empirical stand-alone papers, which contain a thorough discussion of the results and the implications for both research and practice. The following section provides a condensed summary of the results and implications.

The first paper of this dissertation addresses research question I by analyzing the marginal effects of economic and social factors on individuals' support for hosting the Olympics. I find that economic factors generally matter for individuals' decisions on hosting the Olympics, even though economists are skeptical that hosting the Olympics has a net economic impact at all (Billings & Holladay, 2012; Mitchell & Stewart, 2015; Sullivan & Leeds, 2015). From a non-ethical and purely instrumental point of view, it therefore makes sense that pro-Olympics campaigns keep promising economic benefits of the Olympics to the electorate. Comparing the effect of economic and social factors,

however, shows that more weight in campaigns should be given to social factors. Their marginal effects are consistently higher than the marginal effects of economic factors.

The second paper complements the findings of paper I and addresses research question II by directing its focus on the process through which individuals make their hosting decision at referenda. It integrates affective forecasting and dual process theory to analyze the interplay of affective and deliberate decision mechanisms. The paper's findings indicate that identification has a strong influence on affective decision components. The latter exert a direct influence on the hosting decision, which is moderated through a deliberate mechanism described as effortful processing. I thus conclude a dominant role of the intuitive system for hosting decisions. Hosting decisions seem to be rather regulated by the deliberate system in the sense of a watchdog function theorized by Kahneman and Frederick (2002) than driven by it. These findings can be useful for both practitioners' short- and long-term strategies to influence an Olympic referendum. In the short-term before a referendum, they could benefit from designing pro-Olympic campaigns in a way that they rather prioritize evoking affective feelings than communicating facts. In the long-term, pro-Olympic hosting practitioners could benefit from investing into new and existing grassroots initiatives associated with the Olympics (e.g., "Jugend trainiert für Olympia" in Germany). Such investments could strengthen the identification of the youth with the Olympics, which can pay off through affective decision components once the youth is allowed to vote at referenda.

The third paper of this dissertation addresses research question III by analyzing the effect of four categories of variables identified by Smets and van Ham (2013) on voter turnout: rational choice factors, mobilization factors, psychological factors, and resource factors. Considering that the effects of most psychological and resource factors

Conclusion

Overall summary

are largely country-specific, it seems worth focusing on rational choice and mobilization factors for this short summary section. With respect to the rational choice factors, I find a u-shaped effect of support on voter turnout across all twelve participating countries, which suggests that polarization, be it against or for hosting the Olympics, has a strong effect voter turnout. Practitioners involved in Olympic campaigns can use this finding strategically to influence referendum outcomes, e.g., by applying methods such as asymmetric demobilization (see detailed description in chapter 4). With regards to mobilization factors, I identify an asymmetry between the effects of opponents' versus supporters' arguments for or against hosting the Olympics, with opponents' arguments being more likely to influence voter turnout. This finding is in line with Könecke et al. (2016), who find that supporters of hosting the Olympics in Munich failed to establish sufficient communication with local residents. I therefore advocate a further professionalization of pro-Olympic communication plans. Such plans need to reach a similar quality and probably require similar investments than the detailed infrastructure and financing plans that were, for example, created for Hamburg's 2024 Summer Olympics campaign.

Taken together, the three research papers provide clear answers to all three research questions. First, social factors are more important than economic factors for individuals' support of hosting the Olympics. Second, the intuitive system of individuals has a dominant influence on the decision making process for hosting the Olympics, with deliberate mechanisms exerting a moderating role. Third, the determinants of voter turnout are country-specific but generally include rational choice, mobilization, psychological and resource factors, with the rational choice factor support having a strong, u-shaped effect across all twelve participating countries.

5.2 Research contribution and future directions

This dissertation contributes to two streams of existing research, the first one being research on the Olympics in the field of sports economics. Within this field, the focus has so far mainly been on the economic impact of hosting the Olympics (Schmidt, 2017). Although there are a few studies that focus on social factors associated with a hosting of the Olympics (see for example, Kaplanidou & Karadakis, 2010), there is no study that compares the strength of the effect of social factors on an individual's hosting decision to the strength of the effect of economic factors. This dissertation closes this gap and shows, based on a comparison of marginal effects, that social factors have a stronger influence. This finding hopefully motivates future sports economics research to advance from a dominant focus on economic factors to a balanced recognition of both social and economic factors.

Like social factors for the hosting decision itself, the determinants of turnout at Olympic referenda have received little attention in the Olympics literature. In the political science literature, in contrast, there is a multitude of studies on turnout (Geys, 2006a). A major contribution of this dissertation is that it has condensed and transferred the multitude of studies from political science into a structured model for examining turnout at Olympic referenda, which can serve as a starting point for future research.

In addition, the identified crucial role of polarization, i.e., the u-shaped effect of support, and the asymmetry between the influence of supporters' versus opponents' arguments on turnout further point at two findings that have been largely overlooked by sports economists. I hope that this dissertation can instill curiosity and further research on these two factors.

Beyond its contribution to sports economics, this dissertation contributes to the dual process theory of decision making. Even though many studies have been conducted on

Conclusion

Research contribution and future directions

either the effect of intuitive *or* deliberate processes of decision making, the interplay of the two is “understudied” (Mikels et al., 2011, p. 751) and a decade-old call for research on this interplay by renowned scholars like Loewenstein et al. (2001) has so far remained unanswered. Paper II of this dissertation contributes to closing this gap by integrating dual process and affective forecasting theory into a coherent model, which is tested using population-representative data across twelve countries. This makes Paper II, to the best of my knowledge, the first academic work that provides generalizable evidence for Kahneman and Frederick’s theory (2002) on the regulatory influence of deliberate decision components on intuitive decision components. It further identifies identification as an important context-specific antecedent of expected feelings and provides evidence for a strong role of expected feelings in the decision-making process, thereby departing from the traditional economics literature that portrays decisions as occurring in the “emotional vacuum” (Elsbach & Barr, 1999, p. 191) of rational decision-making.

In addition to its theoretical contributions, this dissertation could provide some methodological insights. Paper II of this dissertation is, to the best of my knowledge, the first large-scale application of the latent moderated structural equation (LMS) procedure, which is not yet integrated into leading statistical software packages such as STATA 14. Sardeshmukh and Vandenberg (2016) have only recently developed the LMS procedure to estimate structural equation models with moderated-mediation of latent variables. I adapted their procedure using the statistics software Mplus to draw multi-group comparisons and to test for measurement invariance across different groups. As I found the few existing large-scale measurement invariance studies very helpful for my own research, I hope that other researchers can likewise benefit from my work that focuses on a multi-group application of moderated-mediation of latent variables.

Conclusion

Research contribution and future directions

Apart from the contributions, this dissertation has limitations that potentially open new research opportunities. Four limitations stand out and are worth summarizing. First, Olympic referenda are a relatively new topic. The theoretical models developed and tested are based on a transfer from general Olympics literature as well as related fields such as political science and decision making. The variable selection employed in this dissertation is thus unlikely to be exhaustive for the specific context of the Olympics. Future exploratory research is needed to determine and prioritize further Olympic-specific variables.

Second, the findings of this dissertation are survey-based. Despite a careful participant selection, anonymity and statistical countermeasures, the findings are not immune to a certain level of socially desirable responding. I would therefore welcome other research approaches (e.g., certain types of experiments) that can fully account for such potential biases.

Third, the geographical focus of this dissertation is on the United States and eleven democratic European countries. It would be interesting to replicate the analyses in both non-Western countries with established democracies (e.g., Japan and South Korea) and without established democracies (e.g., China and Russia). Particularly insightful would be a comparison of the importance of the different social and economic factors for the support of hosting the Olympics. Differences could support giving host cities more freedom in organizing Olympics adapted to local needs as opposed to fulfilling detailed IOC standards, which have been above 7,000 pages long for hosting the 2022 Winter Olympics (International Olympic Committee, 2016a).

Fourth, I recognize that the Olympics are a specific event for analyzing decision-making. It offers the advantage that it is well-known and requires little explanation to

Conclusion

Research contribution and future directions

most survey participants. Also, it evokes a broad range of feelings from excitement to indifference to strong refusal, which avoids a common fallacy of only picking target events that are clearly positive or negative to all participants (Christophe & Hansenne, 2016). I would nevertheless appreciate to test the findings of this dissertation within the context of other mega sport events (e.g., the FIFA World Cup) and beyond mega sport events.

All in all, I would welcome to see more economic research on the Olympics beyond the economic impact studies that have dominated over the last decade. Broadening the research focus on the Olympics can help economists to achieve a greater impact among decision makers (Schmidt, 2017) and to support the Olympics to remain an unparalleled event promoting sports and peaceful internationalism.

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**Eidesstattliche Erklärung
nach §10 Abs. 1 Nr. 6 der Promotionsordnung der WHU
vom 05.03.2008 i. d. F. vom 08.03.2012**

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