

Ilmenau Economics Discussion Papers, Vol. 17, No. 77

**The (Monetary) Value of Competitive Balance for Sport
Consumers**

A Stated Preferences Approach to European Professional Football

Tim Pawlowski & Oliver Budzinski

Oktober 2012

Institute of Economics

Ehrenbergstraße 29

Ernst-Abbe-Zentrum

D-98 684 Ilmenau

Phone 03677/69-4030/-4032

Fax 03677/69-4203

<http://www.wirtschaft.tu-ilmenau.de>

ISSN 0949-3859

The (Monetary) Value of Competitive Balance for Sport Consumers

A Stated Preferences Approach to European Professional Football

Tim Pawlowski & Oliver Budzinski

Tim Pawlowski (corresponding author)^{1, 2}

Professor of Sport Economics, Sport Management and Sport Media Research

University of Tuebingen

Faculty of Economics and Social Science

Institute of Sports Science

Wilhelmstraße 124

D-72074 Tuebingen

Phone: +49 7071 29 76544

Fax: +49 7071 29 5031

Email: tim.pawlowski@uni-tuebingen.de

Oliver Budzinski²

Professor of Economic Theory

Ilmenau University of Technology

Institute of Economics

Ehrenbergstraße 29

D-98698 Ilmenau

Email: oliver.budzinski@tu-ilmenau.de

Abstract: Ever since the pioneering work of Rottenberg (1956) and Neale (1964), the uncertainty of outcome hypothesis (UOH) has played a major role in the eco-

¹ The author gratefully acknowledges that this research benefited from a UEFA Research Grant.

² The authors would like to thank David Forrest, Arne Feddersen and the participants of the 2nd Conference on Football and Finance in Munster as well as the participants of the 4th ESEA/XIV IASE Conference in London for valuable comments on earlier drafts of this paper. In addition, the authors would like to thank Christopher Dick, Paul Downward, Mikkel Draebye, Thomas Junod, Stefan Késenne, Stephanie Leach, Christian Müller, Katalin Monostori and Gerco van Dalfsen for their help in conducting the research project as well as Nadine Neute for editorial assistance.

conomic analysis of professional sport leagues. However, decades of empirical research have not been successful in establishing clear evidence for the importance of competitive balance (CB) for attendance or TV viewers in European professional football. In order to find possible reasons for the gap between the UOH and (the lack of) its empirical validation, our paper adopts a stated preference approach focused on the fans' perception of CB and its relevance in three European professional football leagues. The results indicate that a tipping point/threshold value of CB exists and that crossing this threshold can lead to massive demand reactions. However, since the threshold has not been reached in the leagues included in the sample, the paper provides a possible explanation for the above mentioned gap.

Keywords: Willingness-to-pay; Competitive balance; Uncertainty of outcome hypothesis; European Football

JEL classification: D12, L83

The (Monetary) Value of Competitive Balance for Sport Consumers

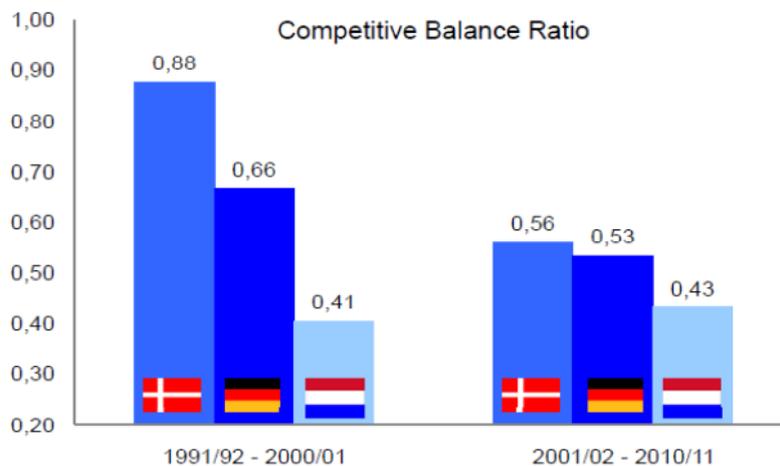
A Stated Preferences Approach to European Professional Football

1. INTRODUCTION

Ever since the pioneering work of Rottenberg (1956) and Neale (1964), the uncertainty of outcome hypothesis (UOH) has played a major role in the economic analysis of professional sport leagues. The UOH suggests that increasingly imbalanced leagues potentially influence fan interest in a negative way and, consequently, stadium attendance and TV viewership will decrease.

Against this background, the increasing imbalance of the top 5 national football leagues in Europe as well as of the UEFA Champions League may reflect a worrying development (Pawlowski, Breuer & Hovemann, 2010). Moreover, other European football leagues also increasingly become less balanced (e.g. Denmark) or have displayed a comparatively and considerably low degree of competitive balance (CB) over years (e.g. the Netherlands) and might face the risk of losing fan interest. Figure 1 presents the *competitive balance ratio* (a measure developed by Humphreys, 2002) for Germany, Denmark and the Netherlands for the last two decades illustrating this decline in CB.

Figure 1: Competitive Balance Ratio of the top five clubs in the Danish, German and Dutch professional football leagues before and after the turn of the millennium



However, decades of empirical research within sports economics have not been successful in establishing clear evidence for the importance of the uncertainty of match or seasonal outcomes for attendance or TV viewers in European professional football.²

Thus, a puzzling gap between major and well-established sports economic insights and the apparently *actual* behavior of sports fans – the consumers of the product – surfaces and calls for analyzing possible reasons for this gap. One avenue of research that could contribute to closing this gap tackles possible mismatches in the conceptualization of CB in empirical research, on the one hand, and in the eyes of the fans, on the other hand. In other words, fans may perceive CB in a different way than it is measured in science. As a consequence, the lack of evidence for CB influencing fans' behavior might be caused by attributing CB's influence on fans' behavior to measures of CB that do not reflect how CB *actually* influences fans' consumption decisions.

² Starting with the seminal work by Hart, Hutton and Sharot (1975), most of the studies analyze the (potential) impact of short-term UO on stadium attendance in European professional football. Those studies predominantly found either no significant effect (e.g. Hart et al., 1975; Forrest & Simmons, 2002; 2006) or an effect not supporting the UOH (e.g. Buraimo & Simmons, 2008; Czarnitzki & Stadtmann, 2002; Peel & Thomas, 1992). For an overview on previous research please refer to Pawlowski (2012a; 2012b).

The resulting question is whether it is really appropriate to investigate the effects of CB based on aggregate (past) attendance figures. This requires an unambiguous, stable and continuous relationship between variations of CB and consumption reactions of fans. However, if this relationship is characterized by discontinuities and threshold effects, then the traditional approach may lose some of its explanatory value. For instance, if the (statistically measured) observed variations in CB have not been large enough to bother fans, then they may not affect their consumption patterns and, consequently, demand will not be influenced. It might well be that fans' decision to consume does not react continuously to variations in CB. As long as a sufficient level of CB is not undercut, consumption patterns remain stable or even constant. However, if CB falls below that critical level, then a massive drop in demand occurs. If this is the case, another question arises against the background of the decreasing CB in many European football leagues: are we in fact close to some tipping point beyond which poor CB would deter fans?

In order to approach such kinds of phenomena, it is helpful to distinguish between *objective competitive balance* (OCB) and *perceived competitive balance* (PCB). OCB refers to the statistically measured competitive balance, whereas PCB denotes the competitive balance as perceived by the fans. Traditional approaches in sports economics assume an identity between OCB and PCB, i.e. $OCB = PCB$. Only if this holds true, the statistically measured OCB is a perfect proxy for PCB and qualifies as a good measure to test theories about how CB influences fans' consumption behavior. The hypothesis that we formulate in the preceding paragraph, however, states a case where OCB and PCB are not identical. In order to empirically address PCB in a direct way, we need to ask the fans, i.e. to make use of a stated preferences approach (see more details in section 2). In doing so, we find support for the hypothesis that PCB can considerably differ from OCB, so that OCB is not necessarily a good proxy for PCB.

While a previous paper (Pawlowski, 2012b) is focused on the fans' intention to consume in the German league only, this paper employs a different stated preference approach, i.e. the fans' willingness-to-pay (WTP), and includes data on three

major leagues from Germany, Denmark and the Netherlands.³ In doing so, it provides a robustness check on the previous research. However, the main point of this paper is to provide a unique contribution by analyzing possible (systematic) differences between PCB and OCB.

Despite the necessity of further research to corroborate our findings, the paper provides evidence for the relevance of discontinuities in the relationship of CB and demand reactions. The results indicate that there is indeed a tipping point (threshold) above which the consumption reaction is rather inelastic to variations in CB. However, crossing the threshold leads to a massive demand reaction. This insight obviously has important implications both for sports economics research and the management of sports leagues.

The paper is organized as follows: Section 2 outlines the research design of our study and the data analysis. Results are presented in section 3, followed by a summary and discussion in section 4.

2. RESEARCH DESIGN AND DATA ANALYSIS

This section provides details on the sample selection procedure, the PCB and WTP measures as well as the estimator employed in this paper.⁴

To analyze the PCB and WTP by the fans, a written survey amongst football fans in Europe was conducted.⁵ In contrast to previous research on football fans' perceptions in Europe (inter alia, Königstorfer, Groeppel-Klein & Kunkel, 2010), three countries (Germany, Denmark and the Netherlands) with different levels of 'quality'

³ In contrast, Pawlowski (2012a) is about the fans' intention to consume in the three mentioned countries.

⁴ Please note, that some parts in this method section are similar to Pawlowski (2012b). However, for a comprehensive understanding of the analysis in this paper it appears to be necessary to describe these methodological issues here as well.

⁵ A football fan is characterized to have a major interest in professional football competitions and consumes the product, i.e. either attends a game live in the stadium and/or watches a game live on TV.

of their major leagues were selected. Quality, here, refers to international competitiveness as measured by the UEFA ranking where (at the time of investigation) Germany was 3rd, the Netherlands were 9th and Denmark was 12th. Since it might well be that fans in the stadium differ from fans watching football on TV with regard to their perception of CB, both "types" of fans have been included in the sample. Therefore, the survey took place in the stadium as well as in bars where football matches are broadcasted live.⁶ Furthermore, to control for possible heterogeneity between fans of different teams, cities were chosen with different types of first division teams performing either "constantly good" (CGP), "constantly bad" (CBP) or "volatile" (VP) during the last ten years (see Table 1).

Table 1: Selected games for the surveys

Country	Date	City	Club	Performance	Game
G	11.09.2011	Cologne	1. FC Köln	CBP	1. FC Köln - 1. FC Nürnberg
G	17.09.2011	Hamburg	Hamburger Sport-Verein (HSV)	CGP / VP	HSV - Borussia Mönchengladbach
G	17.09.2011	Leverkusen	Bayer 04 Leverkusen	CGP	Bayer - 1. FC Köln
G	01.10.2011	Dortmund	Borussia Dortmund (BVB)	VP	BVB - Augsburg
G	16.10.2011	Cologne	1. FC Köln	CBP	1. FC Köln - Hannover 96
G	23.10.2011	Leverkusen	Bayer 04 Leverkusen	CGP	Bayer - FC Schalke 04
NL	22.10.2011	Utrecht	FC Utrecht	CBP	FC Utrecht - SC Heerenveen
NL	20.11.2011	Groningen	FC Groningen	VP	FC Groningen - VVV-Venlo
NL	27.11.2011	Enschede	Twente Enschede	CGP	Twente - Vitesse Arnheim
NL	03.12.2011	Groningen	FC Groningen	VP	FC Groningen - NEC Nijmegen
DK	06.11.2011	Copenhagen	FC København	CGP	FC København - Lyngby BK
DK	07.11.2011	Sønderjysk	Sønderjysk E	CBP	Sønderjysk E - Aarhus
DK	20.11.2011	Midtjylland	FC Midtjylland	VP	FC Midtjylland - Aalborg
DK	27.11.2011	Sønderjysk	Sønderjysk E	CBP	Sønderjysk E - Lyngby BK

Notes: Country: G ☐ Germany, NL ☐ Netherlands, DK ☐ Denmark; Performance: CBP constantly bad performance throughout the seasons 2002/03-2011/12, CGP constantly good performance throughout the seasons 2002/03-2011/12, VP volatile performance throughout the seasons 2002/03-2011/12.

The survey was conducted in German, Dutch and Danish language. The overall degree of PCB in the German Bundesliga was assessed via the following question: "Thinking back to previous seasons, how would you rate the level of *suspense* of the Bundesliga on a scale of 0-10 (0=not at all *suspenseful*...10=very *suspenseful*)?". "Suspense" is written in italics since the native terms that we used (for instance, the German term "Spannung") can be misunderstood when translated into

⁶ As ongoing data analysis shows, no obvious differences between both fan "types" exist with regard to the PCB measures and intention to consume (Pawlowski, 2012b). However, this has to be taken with caution since it is not entirely clear that fans watching football matches on TV live in bars represent a good proxy for real "couch potato" fans watching football at home. The latter are not directly considered in our database.

English without the context of the overall sentence. For instance, a dictionary translation of "Spannung" into English may also yield "excitement" next to "suspense", "tension" or "tenseness" and, obviously, excitement can include many other dimensions than close competition between the playing teams and uncertainty of outcome.

However, we are very confident that in all the three countries, the native terms in the context of the wording of the questions were understood to target suspense in the sense of close competition and outcomes remaining uncertain for a long time. To test this assumption, 11 (in addition to the overall PCB measure) inquired items reflecting the short-, mid- and long-term UO were first reduced by applying a principal component analysis and then tested as correlates of the overall degree of PCB by applying ordered probit and logit models with robust standard errors as well as clustered standard errors clustered by favorite teams. As shown in Pawlowski (2012a) for all three countries and in Pawlowski (2012b) for the German subsample only, the overall degree of PCB is (partly) explained by these reduced items.

Three questions related to the overall degree of PCB – "At which level of overall *suspense* (on a scale of 0-10) would you (1) ...start to lose interest in the league; (2) ...not watch a match in the stadium; (3)...not watch a match on television" – were aimed at the fans' *intention to consume*.

Furthermore, two distinct scenarios were tested to investigate the WTP of fans for CB: "Imagine you could increase the *level of suspense* in the LEAGUE by making a financial contribution!" as well as "Imagine you could make sure that the *level of suspense* in the LEAGUE does not decrease in the future by making a financial contribution!"⁷

The WTP-data is used to estimate two PCB-dependant demand functions. These so called Kaplan-Meier survival functions are simply derived by arranging the sample's

⁷ Response categories are: "0€", "1€-2€", "3€-5€", "6€-10€", "11€-15€", "16€-20€", "21€ or more" per stadium ticket per game.

WTP values in ascending order and calculating the proportion of the sample that have a WTP greater than each value (Bateman et al., 2002):

$$(1) \quad \hat{S}(WTP_j) = \frac{n_j}{N} \quad j = 0 \text{ to } J \quad n_j = \sum_{k=j+1}^J f_k$$

with f_k fan k in the sample; N total number of fans in the sample and n_j total number of fans in the sample with a WTP that is greater than WTP_j . The mean WTP is the area bounded by the Kaplan-Meier survival function (Bateman et al., 2002):

$$(2) \quad \overline{WTP} = \sum_{j=0}^J \hat{S}(WTP_j) [WTP_{j+1} - WTP_j]$$

In addition, the median value is displayed at the point at which the function reaches a probability of 0.5 (Bateman et al., 2002).

3. RESULTS

Overall, the inquiries took place before/during 14 matches in the first divisions of the respective leagues and the complete data base contains $n=1,689$ observations (with $n_{\text{Germany}}=1,203$; $n_{\text{Denmark}}=267$, $n_{\text{Netherlands}}=219$). Table 2 summarizes the distribution of variables reflecting interest and consumption patterns as well as the socio-demographic and economic characteristics of respondents in the German, Danish and Dutch samples.

As shown in table 2, the majority of respondents is highly interested in football and regularly consumed first division football in the previous season by watching either football matches live in the stadium and/or on TV. While the distribution with regard to the general interest in football is fairly similar in the three countries, differences occur with respect to the underlying consumption patterns, i.e. the respond-

ents attend fewer matches in the stadium and watch fewer matches on TV in the Danish and Dutch samples compared to the German sample.

Table 2: *Sample characteristics, with distributions in %. All cells in brackets sum to 100 if missing or "other" categories, which are omitted here, are included.*

	German sample	Danish sample	Dutch Sample
Interest and consumption patterns			
interest in football (high; moderate; low)	(88; 10; 2)	(79; 17; 4)	(82; 15; 2)
matches attended in person in the last season (0; 1–5; 6–10; 11–21; >21)	(8; 41; 17; 18; 16)	(6; 23; 18; 30; 22)	(7; 34; 16; 24; 17)
matches watched on television in the last season (0; 1–5; 6–10; 11–21; >21)	(4; 12; 15; 27; 41)	(2; 17; 17; 23; 40)	(10; 26; 17; 19; 26)
Socio-demographic and economic background			
gender (male; female)	(73; 23)	(85; 12)	(82; 16)
age (< 29; 30–49; ≥ 50 years)	(51; 34; 10)	(39; 43; 13)	(28; 46; 21)
family status (single; married)	(43; 27)	(45; 30)	(30; 45)
household size (1; 2; 3; 4; ≥ 5 person)	(17; 27; 21; 15; 9)	(22; 23; 14; 21; 14)	(15; 25; 13; 22; 13)
monthly household net income (< 1,500; 1,501–2,500; > 2,500 Euro)	(31; 24; 24)	(30; 20; 40)	(23; 23; 35)
work status (employed; apprentice/student; pensioner; unemployed)	(58; 21; 3; 2)	(70; 12; 4; 6)	(66; 12; 6; 3)
total number of observations	1,203	267	219

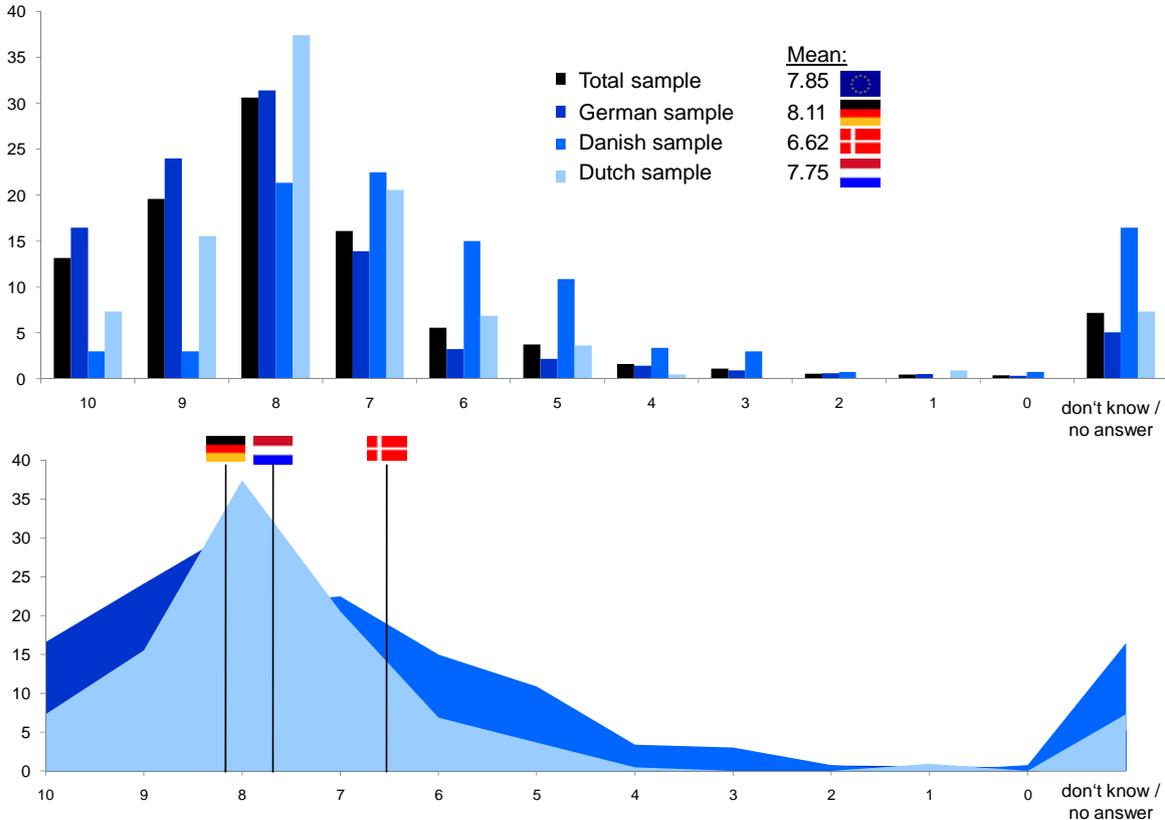
Furthermore, the majority of respondents are male and young in all countries. However, while the majority of respondents are unmarried in the German and Danish samples, the majority of respondents in the Dutch sample are married. Also, some country specific differences occur with regard to the distributions of household size, monthly household net income and work status.

In general, some country specific differences might be the result of different habits and preferences in the three countries analyzed. However, due to the rather small sample sizes we cannot rule out the possibility of specific selection biases. Since this is the first study to focus on the specific population of football fans and the distribution of characteristics across the total population of football fans in the three countries is unknown, it is difficult to judge the representative nature of the three subsamples. However, a rough comparison between the German subsample in this study and a representative study conducted by SPORTFIVE (2009) does not

suggest the existence of significant bias in the German subsample (Pawlowski, 2012a; b).

The following figure provides an overview on the distribution of the PCB measure in the overall sample as well as the subsamples. In general, the distributions are skewed to the left indicating a rather high degree of PCB in the analyzed leagues. However, country specific differences in the degree of perceived CB are obvious: first and foremost, Danish fans perceive the Danish first division to be less balanced (mean: 6.62) than the German (mean: 8.11) and Dutch (mean: 7.75) fans perceive the degree of balance in their first divisions.

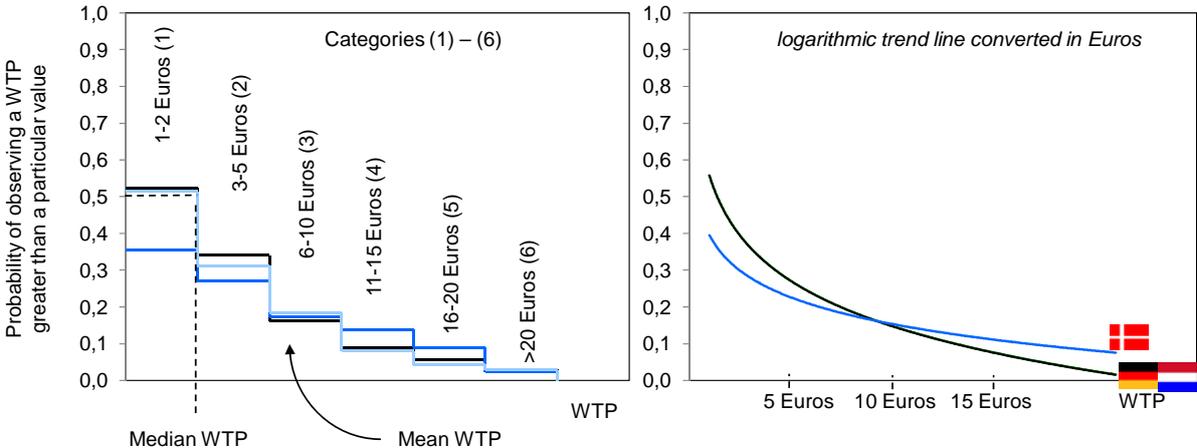
Figure 2: The distribution of the PCB measure in the sample and subsamples



To test the relevance of PCB for football fans, WTP-questions have been formulated as discussed above. Figure 3 displays the estimated Kaplan-Meier survival functions for both, the WTP to ensure the current level of PCB as well as the WTP to increase the current level of PCB in the respective league. Furthermore, median and mean WTP values are displayed with the corresponding standard errors for the latter derived by bootstrapping with $r=999$.

More than 50 percent of the respondents are (in general) willing to pay for either improving or maintaining the current degree of PCB in the corresponding national leagues. The average value is around 3 Euros per stadium ticket per game. However, it turns out that the Danish Fans are willing to pay even more than 5 Euros per stadium ticket per game to increase the current level of PCB in the Danish league.

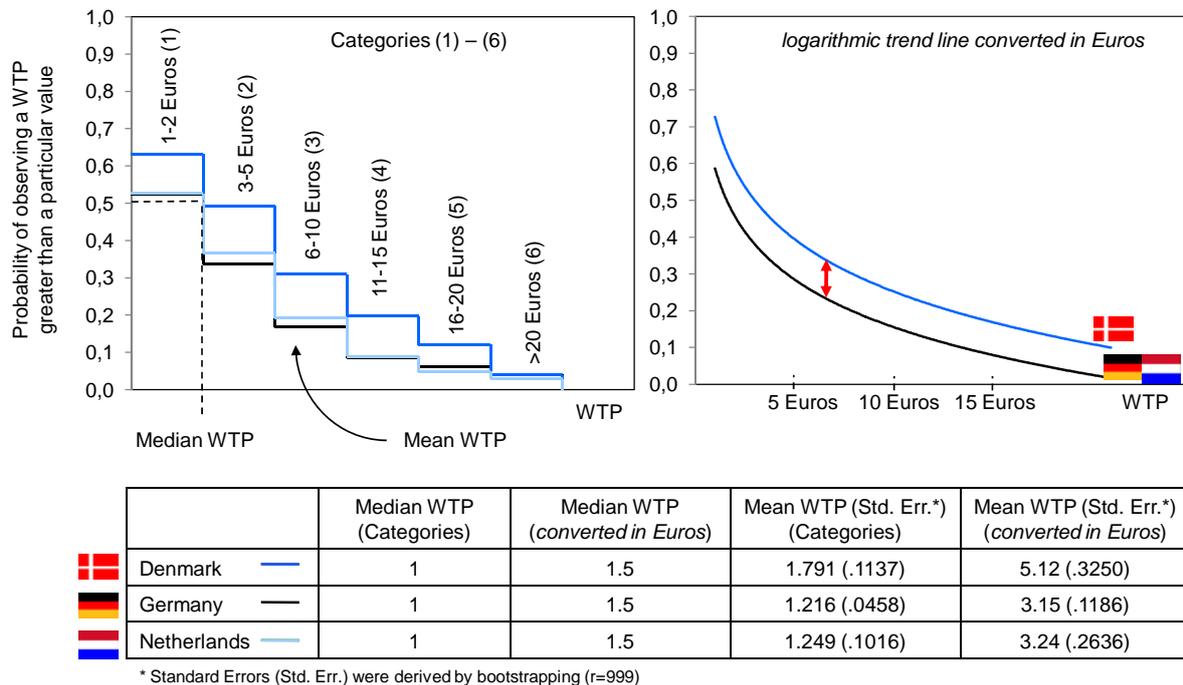
Figure 3: Willingness-to-pay (per stadium ticket per game) to ensure the current level of PCB



	Median WTP (Categories)	Median WTP (converted in Euros)	Mean WTP (Std. Err.*) (Categories)	Mean WTP (Std. Err.*) (converted in Euros)
 Denmark 	0	0	1.047 (.1093)	3.10 (.3236)
 Germany 	1	1.5	1.199 (.0460)	3.09 (.1185)
 Netherlands 	1	1.5	1.160 (.1050)	2.98 (.2697)

* Standard Errors (Std. Err.) were derived by bootstrapping ($r=999$)

Figure 4: Willingness-to-pay (per stadium ticket per game) to increase the current level of PCB



4. DISCUSSION

The results highlight the country specific (monetary) values of PCB by the fans and offer important insights into the role of CB policy in professional sports. First, in most cases only marginal differences exist between the three countries. However,

Danish fans are willing to pay more than 160 per cent of the value that fans in Germany and the Netherlands are willing to pay (5 Euros compared to 3 Euros) to increase the current level of CB and, furthermore, are considerably more sensitive to changes in PCB. Consequently, in the eyes of the fans competitive imbalance appears to be a more serious issue in the Danish league compared to the other two.

At first sight, this represents an astonishing result since the statistically measured levels of CB (= OCB-levels) display a comparatively well-balanced Danish league (again compared to the other two). So, while

$$(3) \quad \text{OCB}_{\text{Denmark}} > \text{OCB}_{\text{Germany}} > \text{OCB}_{\text{Netherlands}}$$

follows from the statistical competitive balance ratio (see figure 1), the perception of the fans in the three countries lead to a

$$(4) \quad \text{PCB}_{\text{Denmark}} < \text{PCB}_{\text{Netherlands}} < \text{PCB}_{\text{Germany}}$$

ranking (see figure 2)!

The first conclusion that can be drawn from this result is that PCB actually matters. It makes a difference whether we look at statistical measures for CB (OCB) or whether we look at the perception of the fans (PCB). This insight alone offers important implications both for science and management. Understanding the effects of CB on economic success, attendance figures, profits, etc. of leagues requires considering that fans perceive CB in a different manner than statistics measure it. And it is certainly not a far-stretched conclusion that fans' perception drives fans' behavior more than statistical measures. Obviously, this has important implications also for the management of leagues.

Based upon our study in this paper, however, we can offer a second insight. In the case of the Danish league, the decrease in OCB seems to influence perceptions in a stronger way than the level of OCB. While the Danish league indeed is characterized by a better OCB than the other two in both periods (see figure 1), the decrease of CB is much more dramatic in Denmark than in the Netherlands and in Germany. The Competitive Balance Ratio indicator for Denmark has decreased by around 36 per cent (from 0.88 to 0.56) between the two periods, whereas for Germany it has decreased by around 20 per cent (from 0.66 to 0.53) and the Dutch one remained almost unchanged (increase by around 5 per cent from 0.41 to 0.43). Thus, the difference between OCB and PCB (levels) can be explained by changes of OCB being a stronger influence on fans' perception than OCB levels. If this hypothesis can be

corroborated by further research, it offers additional important insight of how to analyze the CB/economic effects interface.

Finally, as a third conclusion from our analysis, we find supportive evidence for our hypothesis that the relation between CB and fans' consumption includes a discontinuity in terms of a tipping point above which changes in CB are not very relevant for fans whereas fans consumption behavior does change significantly once CB falls below that crucial threshold. In other words, changes in consumption behavior seem to be triggered by PCB falling below a crucial threshold, where the WTP for CB improvements 'jumps' to a higher level.

Summing up, by employing a stated preferences approach, the paper provides empirical evidence for our suggestion, that (systematic) differences between PCB and OCB might serve as a possible explanation for the gap between the UOH and the (lack of) its empirical validation with regard to European professional football. Nevertheless, stated preference methods are based on what people say rather than what people do as pointed out by Zou and Hobbs (2006). Furthermore, the question arises whether the simplistic WTP-scenarios employed are appropriate in this research context. Therefore, the estimated *absolute* WTP-values in this study should be treated with caution. However, even if (due to the above mentioned methodological restrictions) the derived *absolute* WTP-values are biased, this bias at least should be the same bias for all countries, i.e. the detected country specific differences (*relative* WTP-values) should remain rather robust. Therefore, despite these shortcomings, the paper presents a promising avenue for future research into the development and application of other methods to test the UOH.

REFERENCES

- Bateman et al. (2002). *Economic Valuation with Stated Preference Techniques: A Manual*. Cheltenham: Edward Elgar.
- Buraimo, B. and Simmons, R. (2008). Do sports fans really value uncertainty of outcome? Evidence from the English Premier League. *International Journal of Sport Finance*, 3(3), 146–155.
- Czarnitzki D. & Stadtmann, G. (2002). Uncertainty of outcome versus reputation: Empirical evidence for the First German Football division. *Empirical Economics*, 27, 101–112.
- Forrest, D. & Simmons, R. (2002). Outcome uncertainty and attendance demand: The case of English soccer. *Journal of the Royal Statistical Society, Series D (The Statistician)*, 51(2), 229-241.
- Forrest, D. & Simmons, R. (2006). New issues in attendance demand: The case of the English Football League. *Journal of Sports Economics*, 7(3), 247–266.
- Hart, R. A., Hutton, J. & Sharot, T. (1975). A statistical analysis of association football attendances. *Applied Statistics*, 24(1), 17–27.
- Humphreys, B. R. (2002). Alternative measures of competitive balance in sports leagues. *Journal of Sports Economics*, 3(2), 133–148.
- Koenigstorfer, J., Groeppel-Klein, A., & Kunkel, T. (2010). The attractiveness of national and international football leagues: Perspectives of fans of “star clubs” and “underdogs”. *European Sport Management Quarterly*, 10, 127–163. doi:10.1080/16184740903563406
- Neale, W. C. (1964). The peculiar economics of professional sports: a contribution to the theory of the firm in sporting competition and in market competition. *Quarterly Journal of Economics*, 78(1), 1-14.
- Pawlowski, T. (2012a). *Wettbewerbsintensität im Profifußball - Eine empirische Untersuchung zur Bedeutung für die Zuschauer*. Wiesbaden: Springer-Gabler Research (ISBN: 978-3-658-00210-7).
- Pawlowski, T. (2012b). Testing the uncertainty of outcome hypothesis in European professional football - A stated preference approach (unpublished working paper).

- Pawlowski, T., & Anders, C. (2012). Stadium attendance in German professional football – The (un)importance of uncertainty of outcome reconsidered. *Applied Economics Letters*, 19, 1553-1556. doi:10.1080/13504851.2011.639725
- Pawlowski, T., Breuer, C., & Hovemann, A. (2010). Top club's performance and the competitive situation in European domestic football competitions. *Journal of Sports Economics*, 11, 186-202. doi:10.1177/1527002510363100
- Peel, D. A. & Thomas, D. A. (1992). The demand for football: Some evidence on outcome uncertainty. *Empirical Economics*, 17(2), 323–331.
- Rottenberg, S. (1956). The baseball player's labour market. *Journal of Political Economy*, 64(3), 242-258.
- SPORTFIVE (2009). European Football—England, France, Germany, Italy and Spain. SPORTFIVE: Hamburg.
- Zou, N. N. & Hobbs, J. E. (2006). Modelling functional food choice and health care impacts: A literature review. University of Saskatchewan, Department of Agricultural Economics (Research Project Number CMD-06-02).

**Diskussionspapiere aus dem Institut für Volkswirtschaftslehre
der Technischen Universität Ilmenau**

- Nr. 15 *Kallfaß, Hermann H.:* Vertikale Verträge und die europäische Wettbewerbspolitik, Oktober 1998. In veränderter Fassung erschienen als: „Vertikale Verträge in der Wettbewerbspolitik der EU“, in: *Wirtschaft und Wettbewerb*, 49. Jg., 1999, S. 225-244.
- Nr. 16 *Steinrücken, Torsten:* Wirtschaftspolitik für offene Kommunikationssysteme - Eine ökonomische Analyse am Beispiel des Internet, März 1999.
- Nr. 17 *Kallfaß, Hermann H.:* Strukturwandel im staatlichen Einfluss, April 1999.
- Nr. 18 *Czygan, Marco:* Wohin kann Wettbewerb im Hörfunk führen? Industrie-ökonomische Analyse des Hörfunksystems der USA und Vergleich mit Deutschland, Dezember 1999.
- Nr. 19 *Kuchinke, Björn:* Sind vor- und vollstationäre Krankenhausleistungen Vertrauensgüter? Eine Analyse von Informationsasymmetrien und deren Bewältigung, September 2000.
- Nr. 20 *Steinrücken, Torsten:* Der Markt für „politische Zitronen“, Februar 2001.
- Nr. 21 *Kuchinke, Björn A.:* Fallpauschalen als zentrales Finanzierungselement für deutsche Krankenhäuser: Eine Beurteilung aus gesundheitsökonomischer Sicht, Februar 2001.
- Nr. 22 *Kallfaß, Hermann H.:* Zahlungsunfähige Unternehmen mit irreversiblen Kosten, ihre Fortführungs- und Liquidationswerte, März 2001.
- Nr. 23 *Kallfaß, Hermann H.:* Beihilfenkontrolle bei Restrukturierungen und Privatisierungen, April 2001.
- Nr. 24 *Bielig, Andreas:* Property Rights und juristischer Eigentumsbegriff. Leben Ökonomen und Juristen in unterschiedlichen Welten?, Juni 2001.
- Nr. 25 *Sichelstiel, Gerhard:* Theoretische Ansätze zur Erklärung von Ähnlichkeit und Unähnlichkeit in Partnerschaften, Juni 2001.
- Nr. 26 *Bielig, Andreas:* Der „Markt für Naturschutzdienstleistungen“. Vertragsnaturschutz auf dem Prüfstand, Juli 2001.
- Nr. 27 *Bielig, Andreas:* Netzeffekte und soziale Gruppenbildung, Januar 2002.
- Nr. 28 *Kuchinke, Björn A.; Schubert, Jens M.:* Europarechtswidrige Beihilfen für öffentliche Krankenhäuser in Deutschland, April 2002.

- Nr. 29 *Bielig, Andreas*: Messung von Nachhaltigkeit durch Nachhaltigkeitsindikatoren, Februar 2003.
- Nr. 30 *Steinrücken, Torsten*: Die Legitimation staatlicher Aktivität durch vertragstheoretische Argumente: Anmerkungen zur Kritik an der Theorie des Gesellschaftsvertrages, März 2003.
- Nr. 31 *Steinrücken, Torsten; Jaenichen, Sebastian*: Heterogene Standortqualitäten und Signalstrategien: Ansiedlungsprämien, Werbung und kommunale Leuchtturmpolitik, April 2003.
- Nr. 32 *Steinrücken, Torsten*: Funktioniert ‚fairer‘ Handel? Ökonomische Überlegungen zum alternativen Handel mit Kaffee, Juli 2003.
- Nr. 33 *Steinrücken, Torsten; Jaenichen, Sebastian*: Die Wiederentdeckung der Zweitwohnsitzsteuer durch die Kommunen - zu Wirkungen und Legitimation aus ökonomischer Sicht, September 2003.
- Nr. 34 *Rissiek, Jörg; Kressel, Joachim*: New Purchasing & Supply Chain Strategies in the Maintenance, Repair and Overhaul Industry for Commercial Aircraft, September 2003.
- Nr. 35 *Steinrücken, Torsten; Jaenichen, Sebastian*: Europäische Beihilfekontrolle und Public Utilities - Eine Analyse am Beispiel öffentlicher Vorleistungen für den Luftverkehr, Dezember 2003.
- Nr. 36 *Voigt, Eva; GET UP*: Gründungsbereitschaft und Gründungsqualifizierung - Ergebnisse der Studentenforschung an der TU Ilmenau, April 2004.
- Nr. 37 *Steinrücken, Torsten; Jaenichen, Sebastian*: Levelling the playing field durch staatliche Beihilfen bei differierender Unternehmensmobilität, Mai 2004.
- Nr. 38 *Steinrücken, Torsten; Jaenichen, Sebastian*: Sekundärwirkungen von Unternehmensansiedlungen - Eine Beurteilung staatlicher Aktivität beim Auftreten paretorelevanter Nettoexternalitäten, Juni 2004.
- Nr. 39 *Kallfaß, Hermann H.*: Wettbewerb auf Märkten für Krankenhausdienstleistungen - eine kritische Bestandsaufnahme, Juni 2004.
- Nr. 40 *Engelmann, Sabine*: Internationale Transfers und wohlfahrtsminderndes Wachstum, September 2004.
- Nr. 41 *Steinrücken, Torsten; Jaenichen, Sebastian*: Zum Einfluss von Ausländern auf die Wirtschaftsleistung von Standorten - Ist Zuwanderung ein Weg aus der ostdeutschen Lethargie?, Oktober 2004.

- Nr. 42 *Steinrücken, Torsten; Jaenichen, Sebastian: Wer ist wirklich reich? - Zu Problemen der Wohlfahrtsmessung durch das Bruttoinlandsprodukt, April 2005.*
- Nr. 43 *Steinrücken, Torsten; Jaenichen, Sebastian: Wo bleiben die Subventionssteuern? - Probleme des Beihilfenrechts und ein alternatives Regulierungskonzept, Mai 2005.*
- Nr. 44 *Jaenichen, Sebastian; Steinrücken, Torsten; Schneider, Lutz: Zu den ökonomischen Wirkungen gesetzlicher Feiertage - Eine Diskussion unter besonderer Berücksichtigung der Arbeitszeitpolitik, Juni 2005.*
- Nr. 45 *Kuchinke, Björn A.: Qualitätswettbewerb zwischen deutschen Akutkrankenhäusern unter besonderer Berücksichtigung von DRG und Budgets, Juni 2005.*
- Nr. 46 *Kuchinke, Björn A.; Walterscheid, Heike: Wo steht der Osten? Eine ökonomische Analyse anhand von Wohlfahrts- und Happinessindikatoren, Juni 2005.*
- Nr. 47 *Kuchinke, Björn A.; Schubert, Jens M.: Staatliche Zahlungen an Krankenhäuser: Eine juristische und ökonomische Einschätzung nach Altmark Trans und der Entscheidung der Kommission vom 13.7.2005, August 2005.*
- Nr. 48 *Steinrücken, Torsten; Jaenichen, Sebastian: Überkapazitäten zur Absicherung politischer Risiken und Instrumente finanzwirtschaftlicher Gegensteuerung, November 2005.*
- Nr. 49 *Jaenichen, Sebastian; Steinrücken, Torsten: Opel, Thüringen und das Kaspische Meer, Januar 2006.*
- Nr. 50 *Kallfaß, Hermann H.: Räumlicher Wettbewerb zwischen Allgemeinen Krankenhäusern, Februar 2006.*
- Nr. 51 *Sickmann, Jörn: Airport Slot Allocation, März 2006.*
- Nr. 52 *Kallfaß, Hermann H.; Kuchinke, Björn A.: Die räumliche Marktabgrenzung bei Zusammenschlüssen von Krankenhäusern in den USA und in Deutschland: Eine wettbewerbsökonomische Analyse, April 2006.*
- Nr. 53 *Bamberger, Eva; Bielig, Andreas: Mehr Beschäftigung mittels weniger Kündigungsschutz? Ökonomische Analyse der Vereinbarungen des Koalitionsvertrages vom 11. 11. 2005, Juni 2006.*
- Nr. 54 *Jaenichen, Sebastian; Steinrücken, Torsten: Zur Ökonomik von Steuer geschenken - Der Zeitverlauf als Erklärungsansatz für die effektive steuerliche Belastung, Dezember 2006.*

- Nr. 55 *Jaenichen, Sebastian; Steinrücken, Torsten*: Wirkt eine Preisregulierung nur auf den Preis? Anmerkungen zu den Wirkungen einer Preisregulierung auf das Werbevolumen, Mai 2007.
- Nr. 56 *Kuchinke, B. A.; Sauerland, D.; Wübker, A.*: Determinanten der Wartezeit auf einen Behandlungstermin in deutschen Krankenhäusern - Ergebnisse einer Auswertung neuer Daten, Februar 2008.
- Nr. 57 *Wegehenkel, Lothar; Walterscheid, Heike*: Rechtsstruktur und Evolution von Wirtschaftssystemen - Pfadabhängigkeit in Richtung Zentralisierung?, Februar 2008.
- Nr. 58 *Steinrücken, Torsten; Jaenichen, Sebastian*: Regulierung und Wohlfahrt in einem Modell mit zwei Aktionsparametern, März 2008.
- Nr. 59 *Lehnert, Ninja M.*: Externe Kosten des Luftverkehrs - Ein Überblick über den aktuellen Stand der Diskussion, April 2008.
- Nr. 60 *Walterscheid, Heike*: Reformbedarf etablierter Demokratien im Kontext dezentralisierter Gesellschaftssysteme - Grundlegende Hindernisse bei Steuersystemreformen“, April 2010.
- Nr. 61 *Walterscheid, Heike; Wegehenkel, Lothar*: Kostenstruktur, Zahlungsbereitschaft und das Angebot von Mediengütern auf Medienmärkten, Juni 2008.
- Nr. 62 *Walterscheid, Heike; Wegehenkel, Lothar*: Wohlstand der Nationen und handlungsrechtliche Struktur eines Gesellschaftssystems, September 2008.
- Nr. 63 *Dewenter, Ralf; Haucap, Justus; Wenzel, Tobias*: Indirect Network Effects with Two Salop Circles: The Example of the Music Industry, Juni 2009.
- Nr. 64 *Dewenter, Ralf; Jaschinski, Thomas; Wiese, Nadine*: Wettbewerbliche Auswirkungen eines nichtneutralen Internets, Juli 2009.
- Nr. 65 *Dewenter, Ralf; Haucap, Justus; Kuchinke, Björn A.*: Das Glück und Unglück von Studierenden aus Ost- und Westdeutschland: Ergebnisse einer Befragung in Ilmenau, Bochum und Hamburg, Oktober 2009.
- Nr. 66 *Kuchinke, Björn A.; Zerth, Jürgen; Wiese, Nadine*: Spatial Competition between Health Care Providers: Effects of Standardization, Oktober 2009.
- Nr. 67 *Itzenplitz, Anja; Seifferth-Schmidt, Nicole*: Warum Klimakonferenzen scheitern, aber dennoch zum Wohl des Weltklimas kooperiert wird, Juli 2010.

- Nr. 68 *Kallfaß, Hermann H.:* Die Aufmerksamkeit für, die Nutzung der und die Werbung in Medien in Deutschland, November 2010.
- Nr. 69 *Budzinski, Oliver:* Empirische Ex-Post Evaluation von wettbewerbspolitischen Entscheidungen: Methodische Anmerkungen, Januar 2012.
- Nr. 70 *Budzinski, Oliver:* The Institutional Framework for Doing Sports Business: Principles of EU Competition Policy in Sports Markets, January 2012.
- Nr. 71 *Budzinski, Oliver; Monostori, Katalin:* Intellectual Property Rights and the WTO, April 2012.
- Nr. 72 *Budzinski, Oliver:* International Antitrust Institutions, Juli 2012.
- Nr. 73 *Lindstädt, Nadine; Budzinski, Oliver:* Newspaper vs. Online Advertising - Is There a Niche for Newspapers in Modern Advertising Markets?
- Nr. 74 *Budzinski, Oliver; Lindstädt, Nadine:* Newspaper and Internet Display Advertising - Co-Existence or Substitution?, Juli 2012b.
- Nr. 75 *Budzinski, Oliver:* Impact Evaluation of Merger Control Decisions, August 2012.
- Nr. 76 *Budzinski, Oliver; Kuchinke, Björn A.:* Deal or No Deal? Consensual Arrangements as an Instrument of European Competition Policy, August 2012.