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Demand for TV Broadcasts of UEFA Champions League Games in Danish Television – The Impact of Uncertainty of Outcome, Stardom, and Local Heroes

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Abstract: There are noticeable conceptual differences between competing concepts for organizing the highest level of European Football. One major conceptual controversy is concerned with the question whether fans have a stronger preference for (more) games between the top teams over a broad participation of less well-known clubs representing more of the regions in Europe or vice versa. Since sports economics theory offers explanations for both views, this paper takes an empirical approach and analyzes revealed fan preferences in a market outside of the Big-5 leagues. It examines the impact of uncertainty of outcome, market value as well as local heroes (domestic players & teams) as determinants of demand in national TV in Denmark. It uses representative panel data of national TV demand for UEFA Champions League games in Denmark from 2006/07-2018/19. We estimate a semi-logarithmic OLS regression model with team fixed-effects where the dependent variable is the natural logarithm of the average TV audience of UCL matches broadcasted in Denmark. We find that the presence of superstar clubs as measured by accumulated market value of players increases broadcast audience significantly, whereas the number of superstar players in a game did not. Matches including Danish clubs (domestic clubs) as well as the number of Danish players on a team's roster (local hero players) show no robust effect on TV audience. Uncertainty of outcome increases TV demand in our model, supporting the UOH for TV audiences and furthering the discussion around diverging preferences between stadium attendance and TV demand.

Keywords: sport broadcasting demand, UEFA Champions League, European Super League, uncertainty of outcome, league management, superstars, local heroes, European football, soccer

JEL-Codes: Z20, L83, D47

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I. Introduction

The year 2021 witnessed the outbreak of a fight about the right way of organizing the highest level of European football[4]: while the Union of European Football Associations (UEFA, representing the national football associations) presented their model of a reformed UEFA Champions League (UEFA, 2021), a company called A22 (representing a number of high-profile European football clubs[5]) presented an alternative model of a so-called Super League (Solberg & Gratton, 2004; Wagner et al., 2021). The battle between the two entities covers a number of fields including, inter alia, (ongoing) law proceedings, public controversy, media campaigns, as well as political intervention. Much of the debate centers around the question which body is – formally, legally, economically, morally – entitled to organize European's highest level of football competition (Wagner et al., 2021; Budzinski & Feddersen, 2022). However, there are also conceptual divides between the proposed models and here much of the discussion focuses on what the fans actually want.[6] In economic terms, this addresses the question for the determining factors of demand: what drives fans into the arenas (stadium attendance) and in front of the broadcasts (on television or through streaming services). While both represent a recurrent topic in sport economics (see section 2), especially the latter drives the commercial business of football: broadcasting revenues represent the single biggest revenue source (accounting for 39%-56% of total revenue 2016/17-2020/21; Deloitte, 2022).

One of the conceptual controversies in the context of premium level football in Europe addresses the question whether fans prefer more games between the top teams (as the Super League proponents argue; Hamilton, 2021) or rather a broad participation of less well-known clubs representing more of the regions in Europe (Solberg & Gratton, 2004). To put it bluntly: do sports fans want to see more of Real Madrid against FC Liverpool or more games involving local representatives like FC Copenhagen or Sparta Prague? Sports economic theory offers explanations for both views.

- Superstar effects, i.e. the over-proportional increase in demand to witness extraordinarily popular clubs and players, favor the first view as stardom concentrates on few clubs

[4] Throughout this paper, football refers to European-style football (sometimes also labelled soccer) in contrast to, for instance, American-style football.

[5] Originally 12 clubs from England (Arsenal, Chelsea, Liverpool, Manchester City, Manchester United, Tottenham Hotspur), Italy (Inter Milan, Juventus Turin, AC Milan) and Spain (Atlético Madrid, Barcelona, Real Madrid). After the collective withdrawal of the Premier League Clubs now six remaining clubs from Spain and Italy, pending Inter Milan´s decision to withdraw (The Athletic, 2021).

[6] Milford (2022) analyzes clubs' communication to fans in the whole matter from a communication science viewpoint. See also Brannagan et al. (2022) for a detailed discussion of fan motivations in this matter.

and superstar players tend to play for superstar clubs (Hausman & Leonard, 1997; Lucifora & Simmons, 2003; Berri et al., 2004; Jewell, 2017).

- Local hero and home-win preferences, i.e. demand increasing with having locals (teams or players) to cheer for, support the second view (Brandes et al., 2008).
- The most prominent demand factor in sports economics is traditionally the uncertainty-of-outcome hypothesis postulating that demand increases if the outcome of a game is more uncertain and less predictable which makes the game more interesting (Rottenberg, 1956; Neale, 1964). Ceteris paribus, the uncertainty of outcome should be higher if teams of similar strengths play against each other (competitive balance), so that a strong preference for outcome uncertainty supports the first view, i.e. organizing a league of similarly strong clubs.

Given the natural limitation of participants in any premier-level European football competition, the two views – a league of the best clubs versus a league representative of the regions – represents a trade-off under realistic assumptions: if current superstar clubs are not regionally-representative distributed across Europe[7], then having broader geographic representation weakens the concentration on the best teams and vice versa. Thus, every concept of a European premier-level league must make a choice leaning more into one or the other direction.

Since theory does not point into an unambiguous direction what would be best for the consumers (the fans), empirical analysis of the demand for broadcasts of premier level European team football games is warranted. Due to the trade-off between (i) superstar clubs coming from very few national leagues (England, Spain, Germany, France, Italy) and most superstar players, irrespective of their nationality, playing for these star clubs and (ii) local top clubs from other countries and regions rarely making it into the final rounds of top level tournaments, it is particularly interesting to analyze audience behavior in a country outside the top 5 leagues because, here, the local top club is likely to miss out on a narrower top level league. While fans in the top 5 league countries will witness some "local" clubs compete in each of the proposed models, Danish fans – as an example for a non-top 5 league country – are more likely to "lose" their locals in the Super League scenario. Therefore, it is particularly interesting how Danish broadcast demand is influenced by superstar clubs playing each other, the presence of local heroes (teams and players), and the level of the uncertainty of outcome. This can give indication whether fans care more about top games or more about local heroes – measured against their

[7] Since the superstar status of teams rests, inter alia, on past success and past popularity (path dependency of superstar effects; MacDonald, 1988), any league design must work with the existing superstar teams and cannot purposefully design new superstar teams.

actual consumption behavior (revealed preferences approach, as opposed to stated preferences as opinion surveys among fans).[8]

In this paper we analyze data from television broadcast audience of UEFA Champions League games in Denmark with semi-logarithmic regression methods. To this end, we answer the following research questions:

(i) Which determinants influence TV demand for Champions League games in markets outside of the Big-5-leagues?

(ii) Do fans prefer broad participation of local clubs and players over superstar clubs and teams?

We find that the presence of superstar clubs as measured by accumulated market value of players increases broadcast audience significantly. Matches with Danish clubs' participation (local hero teams) increase TV broadcast demand only under specific circumstances, whereas the number of Danish players in a team´s squad (local hero players) do not display any significant effect. Uncertainty of outcome increases TV demand in our model, supporting the UOH for TV audiences and furthering the discussion around diverging preferences between stadium attendance and TV demand. Overall, we identify a preference of Danish TV consumers of premier-level European football games for games of star teams over such with local participation. Regarding the specific element of championship design, our results support the Superleague design over the Champions League concept.

The paper is organized as follows: section 2 provides a review of the empirical literature of sports demand. Section 3 describes the data-set and presents our estimation model while. Section 4 delivers the results that are discussed in section 4. Section 5 concludes.

II. Literature Review

The literature regarding the determinants of demand for sports has – for a long time – been dominated by studies of game attendance at sporting events (for comprehensive reviews of 80+ studies, see (Borland & Macdonald, 2003; Szymanski, 2003; García Villar & Rodríguez Guerrero, 2009)). However, the demand determinants of TV audiences differ distinctly from stadium attendance, as Coates, Humphreys and Zhou (2014) suggest. So far, the empirical evidence on the demand determinants of TV audiences is limited, although growing during the last couple

[8] We use the term "fans" to generally describe consumers of European football games. We do not distinguish between different types of fans like hardcore fans, casual fans, etc. Note that while survey-based studies often focus on hardcore fans (self-selection bias), viewing numbers inherently include virtually all type of fans.

of years. Early studies which addresses the topic of television demand for live sports are Kuypers (1997) and Forrest, Simmons, & Buraimo (2005). These studies were followed, inter alia, by Johnsen & Solvoll (2007), Weinbach & Paul (2008); Paul, Wachsman, & Weinbach (2011), Alavy et al. (2007), Nüesch & Franck (2010), Di Domizio (2010), and Feddersen & Rott (2011). Most of the research is published on factors why consumers watch football on television in their national league (Forrest et al., 2005; Buraimo & Simmons, 2009, 2015; Perez et al., 2017).

Some recent studies have shed doubt on the theoretical argument of Rottenberg (1956) and Neale (1964) regarding the role of uncertainty of outcome on the demand for sport events. Specifically, Wills, Tacon & Addesa (2020) examined factors of TV audience demand in major European markets (France, Germany, Italy, Netherlands, Spain & UK) that are home markets to teams that are traditionally successful in the context of the UEFA champions league. They found uncertainty of outcome not significantly associated with TV demand, but the presence of star players and team quality. Cox (2018) established a relationship between the means of consumption of a football game (stadium attendance/ TV) and the dominant preferences among the group, where stadium attendance was positively related with *ex ante* certain matches and TV demand with higher uncertainty. In the other cross-border study by Nalbantis & Pawlowski (2019) of the American consumers interest in European football, the authors find that uncertainty of outcome does not influence the American consumers' demand for a game of European football. In the context of TV demand, the uncertainty of outcome hypothesis seems more generated towards the sport than the consumers (Nalbantis & Pawlowski, 2019). Its role on TV demand for sports, esp. with consumers that are not fans (e.g. in non-home markets for TV broadcasts) is ambiguous (Szymanski, 2006).

Contrary to the ambiguous role of outcome uncertainty, the role of superstar players has been empirically analyzed and established (Hausman & Leonard, 1997; Lucifora & Simmons, 2003; Berri et al., 2004), especially in a football context (DeSchriver, 2007; Brandes et al., 2008; Lawson et al., 2008; LeFeuvre et al., 2013; Parrish, 2013; Jewell, 2017; Gasparetto & Barajas, 2018). The literature has established a strong positive impact of superstar players on TV demand ratings as well as stadium attendance, and positive externalities of superstars in away-games (Hausman & Leonard, 1997; Berri & Schmidt, 2006). Feddersen & Rott (2011) found sport-unrelated factors such as weather (precipitation, temperature) had an significant influence on TV broadcast demand for national football games in Germany.

This paper adds to the existing literature by examining determinants of demand for an international football tournament from viewers outside of the big-5 league countries. It uses previously established concepts of outcome uncertainty, super star- and local heroes-effects and applies them in the novel context of national viewing figures in a non-big-5 market – however, not for the national league but for an international European league. This allows us to better understand revealed fan preferences for watching international football club games.

III. Data and Model

Television ratings in Denmark are collected by Kantar Media, which uses a representative panel of 1,200 Danish households to estimate the nationwide television ratings. The analysis in this study is based on the average number of TV viewers with an age of 3 or older and a person is counted as a viewer for any given TV program if this person has watched at least 10 consecutive minutes of this program (Kantar Gallup, 2019). The observation period of our study includes matches from the start of the 2006/07 until February 2019.

We estimate an OLS regression model with fixed-effects and the empirical model takes the following form.

$$\begin{aligned}\log TV_{ijt} = {} & \gamma_1 HOMEWINPROB_{ijt} + \gamma_2 HOMEWINPROB^2{}_{ijt} + \beta MARKETVALUE_{ijt} \\ & + \delta SUPERSTARS_{ijt} + \alpha LOCALHEROS_{ijt} + \theta DOMESTIC_{ijt} \\ & + \rho \mathrm{SUBSTITUTE}_{ijt} + \lambda TEMPERATURE_{ijt} + \pi \mathrm{PRECIPITATION}_{itj} \\ & + STAGE_{ijt}\nu + CHANNEL_{ijt}\sigma + HT_i + AT_j + S_t + \varepsilon_{ijt}\end{aligned}$$

The dependent variable $\log TV_{ijt}$ is the natural logarithm of the average TV audience of a UCL match between home team i and visiting team j in season t in Denmark. To capture unobservable time-invariant heterogeneity in the participating teams, HT_i and AT_j are home team and away team fixed effects, respectively. S_t denote season fixed effects. We assume that ε_{ijt} is a mean zero, constant variance random variable, while γ_1, γ_2, β, δ, α, θ, ρ, λ, π, ν, and σ are parameters to be estimated.

We follow a common approach within the relevant literature and use win probabilities based on betting odds as a proxy for the uncertainty of outcome. The dataset contains betting odds for a given game offered by up to 11 different bookmakers and collected from http://www.oddsportal.com. For this analysis, average decimal betting odds have been used. Following the literature on betting market efficiency, it is assumed that these average betting odds reflect the market consensus (Koning, 2012; Nyberg, 2014) and are, thus, used instead of odds set by one specific

bookmaker. Since the betting odds in the dataset are given as decimal odds including overround, they have been converted into bookmaker probabilities following Forrest and Simmons (2008; Coates et al., 2014). If d_{ijt}^{H}, d_{ijt}^{D}, and d_{ijt}^{A} are the decimal odds for a home win, a draw, or an away win in a game between home team i and away team j in season t respectively, then, for example, the bookmaker probability for a home win is:

$$HOMEWINPROB_{ijt} = \frac{1/d_{itj}^{H}}{1/d_{itj}^{H} + 1/d_{itj}^{D} + 1/d_{itj}^{A}}$$

The regression model includes both $HOMEWINPROB_{ijt}$ and $HOMEWINPROB^{2}{}_{ijt}$ in order to test whether TV audiences have a preference for outcome uncertainty or reference-dependent preferences. Our model is similar to the reduced form model introduced in Coates et al. (2014), who analyze stadium attendance, and also used in Humphreys and Pérez' (2019), who analyze ratings for La Liga broadcasts in Spanish television. According to Coates et al. (2014), the parameters γ_1 and γ_2 in our regression model are directly related to the relative effects of reference-dependent preferences and loss aversion as well as the preference for outcome uncertainty associated with consumers' utility maximizing decisions to watch football matches. If $\gamma_1 > 0$ and $\gamma_2 < 0$, then the expected utility function for watching a UCL match on TV has an inverted U-shape. A result which would be consistent with the Uncertainty of Outcome Hypotheses (Rottenberg, 1956). However, if $\gamma_1 < 0$ and $\gamma_2 > 0$, then the consumers' expected utility function has a U-shape. A result that Coates et al. (2014) in their theoretical model attribute to the presence of reference-dependent preferences and loss aversion.

The variable $MARKETVALUE_{ijt}$ is the sum of the "market values" of home team i and away team j in season t as published by the internet community portal transfermarkt.co.uk. Their "market values" are based on a complex internal assessment process within this online community and represent expert evaluations and not market transactions Thus, cumulated market values seem to be a good proxy for team quality as perceived by the consumers. Additionally, by using player values as well as player salaries from Major League Soccer for the seasons 2006 to 2015, Prockl & Frick (2018) showed that values are excellent proxies for salaries, which only underlines our argument that these "market values" are a good proxy for team quality. Transfermarkt.co.uk lists market values for individual players for all relevant European football leagues since the year 2000. The team level data is, thereby, the sum of the club's individual player market values. Wide-spread data availability was not sufficient for our analysis prior to the season 2006/07. In the absence of the availability of payroll data for all clubs participating in the UCL, "market values" from transfermarkt.co.uk seem to be a better proxy for team quality

then other proxies used in the relevant literature so far like the sum of points per game, ELO ratings, or the UEFA Club Coefficient.

Our measure of star players is also based on data from transfermarkt.co.uk. However, this time "market values" have been collected on the level of the individual player (approx. 220,000 player–season data). The variable $SUPERSTARS_{ijt}$ is the number of players within the 99th percentile of the distribution of "market values" in each individual season. Other proxies for superstars would be possible based on social media data (e.g., number of followers on Facebook or Twitter). Unfortunately, such data on a level of the players is not available (at least for the earlier seasons of our sample).

$DOMESTIC_{ijt}$ is a dummy variable, which takes the value of one if a Danish team is participating in the respective game and zero otherwise. Due to the position of Denmark in the UEFA ranking, no season with more than one Danish team in the group stage of the UEFA Champions League was recorded. $LOCALHEROS_{ijt}$ is a variable that represents the number of Danish players on the roster of the two teams participating in the game if the teams are not Danish. This restriction has been made in order to avoid multicollinearity. SUBSTITUTE_{ijt} is a dummy variable that takes the value of one if at least one additional game was broadcasted at the same time in Denmark. $STAGE_{ijt}$ is a vector of dummy variables, which capture the effects of the individual rounds of the competition. It comprises of the following variables: ROUND OF SIXTEEN, QUARTER FINAL, SEMI-FINAL, FINAL.

In order to control for effect of the weather two variables are included. First, $TEMPERATURE_{ijt}$ is measuring the mean temperature in degree Celsius at 1 meter height. Second, $PRECIPITATION_{ijt}$ is measuring the amount of precipitation in millimeter. We have collected this information from the webservice weatherunderground.com, which is publishing daily weather data. The values used in our analysis are from the central city of Odense.

$CHANNEL_{ijt}$ is a set of dummy variables which capture the impact of the different broadcasting networks. Within our observation period, four different TV networks have broadcasted games (TV3 MAX, TV3 SPORT, TV3+, Viasat Sport 1).

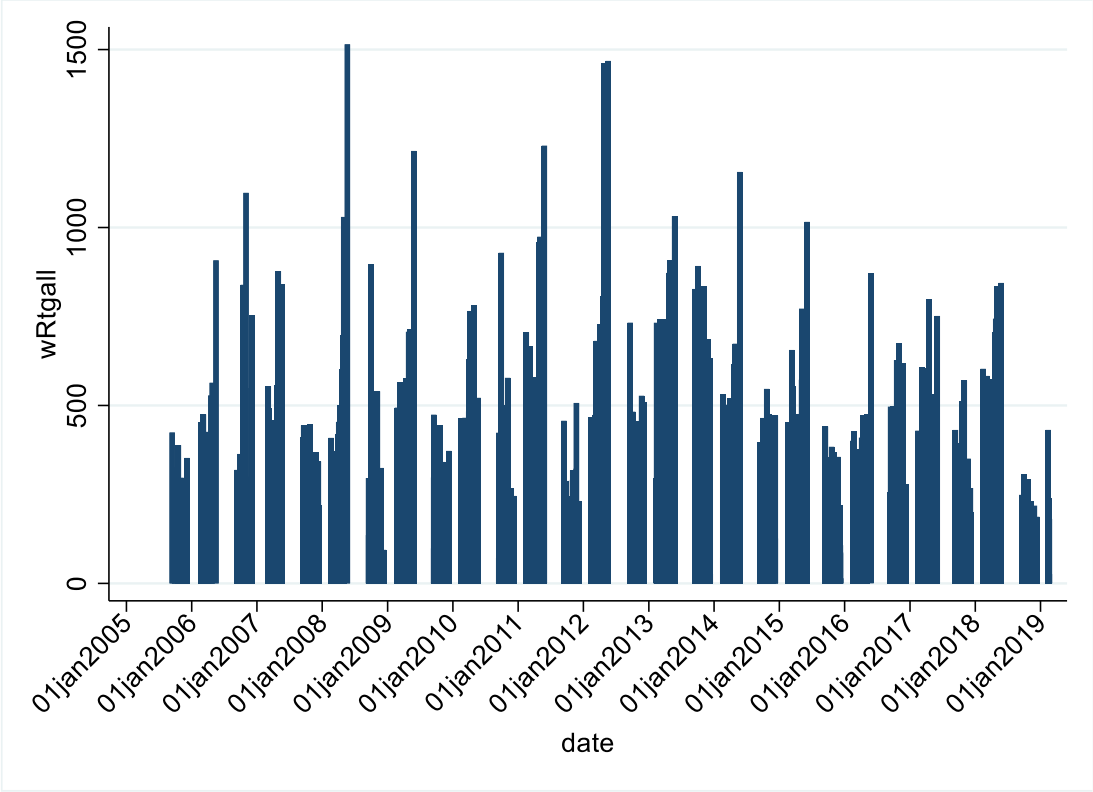

Fig. 1: TV ratings for UCL matches, 2005/06–2018/19

type	*Group Stage*	*Last 16*	*Quarter final*	*Semi-final*	*Final*
Mean	*120.1*	*259.9*	*317.4*	*645.1*	*1012.7*
Minimum	*0.2*	*10.4*	*25.7*	*124.7*	*521.6*
Maximum	*1097.3*	*742.9*	*798.3*	*1461.9*	*1514.7*
SD	*165.9*	*197.7*	*205.3*	*225.7*	*290.2*
N	*659*	*166*	*91*	*50*	*12*

Tab. 1: Descriptive statistics weighted Rating all Target groups

IV. Results and Discussion

Tab. 2 shows the coefficients with standard errors in parentheses as well as p-values indicating the levels of significance. Team-fixed effects account for unobserved influences on the independent variable that are team-specific, like size of the home market or reputation. Drawing from the motivation of the research, we aim to differentiate effects of superstar clubs/ players from local teams/heroes. To this end we calculate models (1) through (3). Model (1) includes only variables of superstar clubs/players and uncertainty of outcome. Model (2) introduces variables of local/domestic factors, where (3) adds non-sporting classical success factors for controls. Our interpretation focuses mainly on model (3), the model with full specification.[9]

[9] We ran all models with UEFA 5-year coefficients as an alternative measure to MarketValue (capturing the stardom of the clubs). This did not improve the empirical results concerning robustness or explanatory power.

VARIABLES	(1) lntv	(2) lntv	(3) Lntv
MarketValue	0.00168***	0.000363**	0.000405**
	(0.000231)	*(0.000181)*	*(0.000177)*
SuperStars	0.0646***	-0.0164	-0.0124
	(0.0110)	*(0.0136)*	*(0.0133)*
HomewinProb	1.438*	1.308*	1.238
	(0.794)	*(0.773)*	*(0.753)*
HomewinProbsq	-1.615**	-0.909	-0.828*
	(0.814)	*(0.707)*	*(0.690)*
Domestic		0.917*	0.896
		(0.527)	*(0.512)*
LocalHeros		0.0151	0.0141
		(0.0448)	*(0.0438)*
Temperature			-0.00322
			(0.00608)
Precipitation			0.0165
			(0.0158)
Substitute			0.138
			(0.109)
last sixteen		0.461***	0.451***
		(0.0786)	*(0.0854)*
quarterfinal		0.479***	0.435***
		(0.0976)	*(0.0957)*
semi-final		0.534***	0.613***
		(0.130)	*(0.143)*
final		0.958***	0.916**
		(0.237)	*(0.401)*
Kickoff-FE			*YES*
Day-FE			*YES*
Broadcaster-FE		*YES*	*YES*
Team-FE			*YES*
Observations	963	963	963
R-squared	0.324	0.777	0.794
Number of season	14	14	14

Notes: SE in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Tab. 2: Regression Results

The estimated coefficient for *MarketValue* is positive and highly significant. Therefore, an increase in combined market value of the two teams *ceteris paribus* increases TV demand for a game. As per our model, the overall value of the team at all positions across the board is positively related to the size of the TV audience whereas single superstar players do not exert the

same influence. Modeling TV demand as specified above, the coefficient estimates for superstars are not significant in any model outside of model (1). With models (2) and (3), we do not find a significant positive effect of players in the Top-1% of earners in any given year on TV demand, as the estimated β-coefficients for *SuperStars* are insignificant in all specifications with team-fixed effects. The presence of high-earning superstar players lacks a significant effect. Therefore, our results provide no evidence to support the superstar hypothesis (Jewell, 2017). To address concerns of multicollinearity of the two variables *SuperStars* and *MarketValue*, we calculate variance inflation factors ($vif = 2.306$; $1/vif = .434$ & $vif = 2.812$; $1/vif = .356$; see appendix). Since the variance inflation factors are well below the generally accepted threshold for OLS regression, we find no evidence of multicollinearity of these two variables.

The coefficient of *Domestic* is insignificant in all models, except (2). Only when not accounting for team fixed-effects, the coefficient for *Domestic* is significant. The estimated coefficient for *LocalHeros* is insignificant in all models. Hence, we only find a weak and non-robust positive effect of domestic teams and no effect of Danish players on Danish TV audience. Danish Players playing in non-Danish clubs (e. g. Andreas Christensen playing for Chelsea FC) do not significantly affect TV demand for CL games in Denmark. The positive impact of local heroes was previously found only valid for home games' stadium attendance, with the effect vanishing in away-games (Brandes et al., 2008). With only n=19 games being home-games for Danish clubs in our sample, our finding is consistent with these results. There does not appear to be neither a strong local-teams effect nor a local-heroes effect in TV broadcast demand. It furthers the distinctive preferences of stadium attendance demand versus TV broadcast demand.

When modeling TV demand as specified above, the estimated coefficients for the probability of a home win *HomewinProb* and its squared value *HomewinProb*sq are statistically significant in models (1) and (3) with p-values just outside the conventional range of statistical significance (p= .11) for the other model. The coefficient for *HomewinProb* is positive whereas the coefficient for its squared term is negative, following an inverse U-shape relationship (see Fig. 2). This is in line with what is expected from the OUH. These results are adjacent to the results of Cox (2018), who could not statistically confirm a U-shape of Home win probability on TV audiences.

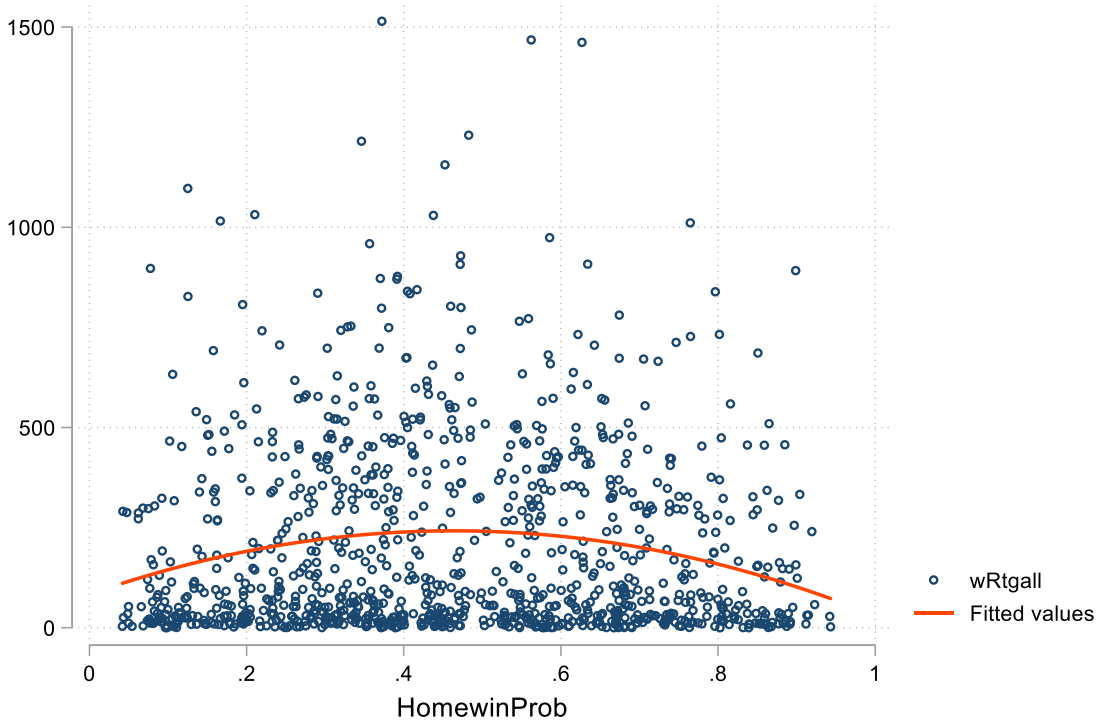

Fig. 2: Inverse U-Shape HomeWinProbability

The shape of the quadratic best line-of-fit confirms this notion (Fig. 2). Games with either low or high home win probability experience less TV demand (both ends of the spectrum). Games with high ex-ante uncertainty gather more demand (middle of the spectrum, with HomewinProb = 0.5 representing perfect uncertainty). Comparing these results to the literature paints an interesting picture. Humphreys & Perez (2019) find a classic U-shape of uncertainty of outcome in Spanish League football (La Liga). A likely explanation of this contrast is that league football and international club football are systematically different. Preferences for ex-ante uncertain games is heavily influenced by the closeness to the teams that are playing. If you are a true fan of a football club you want to see them win or at least have to possibility of an upset win underdog game. If you are not a fan of one specific club over the other, your preferences reflect that and you would prefer a balanced game. Our results are therefore not opposing to the results established in the literature but are supplemental to understanding TV demand for international club football.

Concerning non-sport factors, we find no significant influence of the weather and temperature on the size of TV audience. Suspecting this could be due to the fact that the tournament is designed in a way where the majority of games, especially higher-profile games, are played during the winter/spring months[10] where opportunity cost for consumers in a northern country

[10] For the 2021/22 season: Round of 16 in February and March, Quarter- and Semifinals in April, Final in May.

with low amounts of daylight, below average mean temperature and above average precipitation[11] is comparatively low.

Coefficient estimates for the tournament rounds are positive and significant. The deeper into the tournament the game is played (last sixteen, quarterfinal, semi-final, final) the larger TV audiences it attracts.

V. Conclusions

In this paper, we analyzed an important element of the design of premier-level international European football competitions, namely the question whether fans prefer a league of superstar clubs over a broad geographical representation (i.e., clubs from as much regions as possible) or vice versa. In doing so, we looked into viewing figures of Danish football fans for Champions League games. With Denmark, we chose a country that does not inhabit one of the so-called top-5 leagues, in which the vast majority of the superstar clubs compete. In contrast to viewers in England, Germany, France, Spain, or Italy, this implies that viewers in Denmark will only be able to have a local club from Denmark in the premier-level league when the design of the competition favors geographical representation (simplified the Champions League concept) over a concentration on superstar clubs (simplified the Super League concept). In other words, for Danish viewers these two conceptual design elements actually make a difference. Viewing figures for Denmark allow us to identify whether and how the presence of superstar clubs and local clubs influence actual demand behavior (revealed preferences – instead of stated preferences through surveys, etc.).

Overall, we answered our research questions as follows.

RQ1: Which determinants influence TV demand for Champions League games in markets outside of the Big-5-leagues?

The main factors driving demand are the market value of the clubs (showing a preference for star clubs), the uncertainty of outcome (showing a preference for close competition of equally strong clubs) as well as a number of usual control variables. The presence of domestic clubs does not show a robust positive effect on demand. Superstar players as well as local hero players also do not influence demand significantly.

RQ2: Do fans prefer broad participation of local clubs and players over superstar clubs and teams?

[11] As measured in comparison to the European average values (Danish Meteorological Institute, 2021).

We do not find evidence for regional representation being more important than superstar teams. At least for Denmark, a strong preference for having a local team playing in the premier-level league cannot be derived from the analysis of the viewing figures.

Our results yield important insights for the controversy on the adequate design of premier-level European football as expressed, for instance, in the fight between UEFA/CL and A22/ESL over the "right" direction. While we do not address the overall discussion on this battle (see, inter alia, Wagner et al. 2021; Brannagan et al., 2022; Budzinski & Feddersen, 2022), we pick one important element of championship design, in which the two concepts differ: the trade-off between concentrating on the best clubs (star teams with a comparatively high competitive balance; ESL-concept) and being representative of the various regions within Europe (local hero teams with a comparatively stark competitive imbalance; CL-concept). Our normative criterion is consumer welfare (fan welfare) as expressed by actual demand for television broadcasts of premier-level European football games. Our results show that fans in Denmark (as a non-top-5-leage country) prefer watching competitively close games between superstar teams over witnessing how local teams and stars compete on this level. Thus, with respect to this specific element of championship design, an ESL-style concept comprising the best teams of Europe in one league is more supported by the actual demand behavior of the fans than a CL-style concept focusing on broad geographic inclusion. Fans in a country outside the top 5 leagues find more interest in watching the very best teams against each other than having their local representative around. This is presumably also driven by the fact that Danish teams are without many chances to win the competition. However, this is exactly the situation of many regions in Europe: they could only have a local representative on the top level at the price that this representative cannot compete on equal terms (financially, superstar status, etc.) with the league incumbents.

On a more general level, our analysis shows that the controversial debate on "Champions League vs. Super League" benefits from a closer look on the actual differentiating factors. Empirical analyses of such factors can show what design would be beneficial for consumer welfare beyond heated prejudice. While our analysis of one relevant element of the design debate more supports the Super League concept than the Champions League concept, more elements need to be analyzed in a scientific way before generalized conclusions can be drawn. Thus, our paper represents a contribution to an ongoing debate.

VI. References

Alavy, K., Gaskell, A., Leach, S., & Szymanski, S. (2007). On the Edge of Your Seat: Demand for Football on Television and the Uncertainty of Outcome Hypothesis. *International Journal of Sport Finance, 5*(2).

The Athletic (2021). European Super League will 'reconsider steps to reshape' as English clubs leave. (The Athletic). Retrieved from https://theathletic.com/news/european-super-league-latest/lavycpCOU7Yx/.

Berri, D. J., & Schmidt, M. B. (2006). On the Road With the National Basketball Association's Superstar Externality. *Journal of Sports Economics, 7*(4), 347–358.

Berri, D. J., Schmidt, M. B., & Brook, S. L. (2004). Stars at the Gate. *Journal of Sports Economics, 5*(1), 33–50.

Borland, J., & Macdonald, R. (2003). Demand for Sport. *Oxford Review of Economic Policy, 19*(4), 478–502.

Brandes, L., Franck, E., & Nüesch, S. (2008). Local Heroes and Superstars. *Journal of Sports Economics, 9*(3), 266–286.

Brannagan, P. M., Scelles, N., Valenti, M., Inoue, Y., Grix, J., & Perkin, S. J. (2022). The 2021 European Super League attempt: motivation, outcome, and the future of football. *International Journal of Sport Policy and Politics, 14*(1), 169–176.

Budzinski, O., & Feddersen, A. (2022). Should Organizing Premier-Level European Football Be a Monopoly? And Who Should Run It?– An Economists' Perspective. In J. Kornbeck (Ed.), *EU Sports Antitrust Law and Governance: The Next Frontier?*. Cheltenham: Elgar (forthcomming).

Buraimo, B., & Simmons, R. [Rob] (2009). A tale of two audiences: Spectators, television viewers and outcome uncertainty in Spanish football. *Journal of Economics and Business, 61*(4), 326–338.

Buraimo, B., & Simmons, R. [Rob] (2015). Uncertainty of Outcome or Star Quality? Television Audience Demand for English Premier League Football. *International Journal of the Economics of Business, 22*(3), 449–469.

Coates, D., Humphreys, B., & Zhou, L. (2014). Reference-Dependent Preferences, Loss Aversion, and Live Game Attendance. *Economic Inquiry, 52*(3), 959–973.

Cox, A. (2018). Spectator Demand, Uncertainty of Results, and Public Interest. *Journal of Sports Economics, 19*(1), 3–30.

Danish Meteorological Institute (2021). Climate normals for Copenhagen. Retrieved from https://www.dmi.dk/vejrarkiv/.

Deloitte (2022). Football Money League 2022. Retrieved from https://www2.deloitte.com/content/dam/Deloitte/br/Documents/consumer-business/deloitte-football-money-league-2022.pdf.

DeSchriver, T. D. (2007). Much Adieu about Freddy: Freddy Adu and Attendance in Major League Soccer. *Journal of Sport Management, 21*(3), 438–451.

Di Domizio, M. (2010). Competitive balance and TV audience: An empirical analysis on the Italian Serie A.

Feddersen, A., & Rott, A. (2011). Determinants of Demand for Televised Live Football: Features of the German National Football Team. *Journal of Sports Economics, 12*(3), 352–369.

Forrest, D., & Simmons, R. [Robert] (2008). Sentiment in the betting market on Spanish football. *Applied Economics*, *40*(1), 119–126.

Forrest, D., Simmons, R. [Robert], & Buraimo, B. (2005). OUTCOME UNCERTAINTY AND THE COUCH POTATO AUDIENCE. *Scottish Journal of Political Economy*, *52*(4), 641–661.

Franck, E. P., & Nüesch, S. (2010). The Effect of Talent Disparity on Team Productivity in Soccer. *Journal of Economic Psychology*, *31*(2).

García Villar, J., & Rodríguez Guerrero, P. (2009). Sports attendance: A survey of the Literature 1973-2007. *Rivista Di Diritto Ed Economia Dello Sport*, *5*(2), 111–151.

Gasparetto, T., & Barajas, Á. (2018). Fan preferences: one country, two markets and different behaviours. *European Sport Management Quarterly*, *18*(3), 330–347.

Hamilton, T. (2021). Super League collapses: How fan reaction, revolt helped end English clubs' breakaway. (ESPN.com). Retrieved from https://www.espn.com/soccer/blog-espn-fc-united/story/4366927/super-league-collapses-how-fan-reactionrevolt-helped-end-english-clubs-breakaway.

Hausman, J. A., & Leonard, G. K. (1997). Superstars in the National Basketball Association: Economic Value and Policy. *Journal of Labor Economics*, *15*(4), 586–624.

Jewell, R. T. (2017). The Effect of Marquee Players on Sports Demand. *Journal of Sports Economics*, *18*(3), 239–252.

Johnsen, H., & Solvoll, M. (2007). The Demand for Televised Football. *European Sport Management Quarterly*, *7*(4), 311–335.

Koning, R. H. (2012). Regression tests and the efficiency of fixed odds betting markets. *International Journal of Sport Finance*, *7*(3), 262–274.

Kuypers, T. (1997). *The beautiful game? an econometric study of audiences, gambling and efficiency in English football: Doctoral thesis.*

Lawson, R. A., Sheehan, K., & Stephenson, E. F. (2008). Vend it like Beckham: David Beckham's effect on MLS ticket sales. *International Journal of Sport Finance*, *3*(4), 189–195.

LeFeuvre, A. D., Stephenson, E. F., & Walcott, S. M. (2013). Football Frenzy. *Journal of Sports Economics*, *14*(4), 440–448.

Lucifora, C., & Simmons, R. [Rob] (2003). Superstar Effects in Sport. *Journal of Sports Economics*, *4*(1), 35–55.

MacDonald, G. M. (1988). The Economics of Rising Stars. *The American Economic Review*, *78*(1), 155–166.

Milford, M. (2022). Fans not Customers! Kategoria in the Rise and Demise of the European Super League. *Communication & Sport*, 216747952211034.

Nalbantis, G., & Pawlowski, T. (2019). U.S. Demand for European Soccer Telecasts: A Between-Country Test of the Uncertainty of Outcome Hypothesis. *Journal of Sports Economics*, *20*(6), 797–818.

Neale, W. C. (1964). The peculiar economics of professional sports. *Quarterly Journal of Economics*, *78*(1), 1–14.

Nyberg, H. (2014). A multinomial logit-based statistical test of association football betting market efficiency. *HECER–Helsinki Center of Economic Research*, *Discussion Paper No. 380*.

Parrish, C. (2013). Soccer Specific Stadiums and Designated Players: Exploring the Major League Soccer Attendance Assumption. *International Journal of Sport Management, Recreation & Tourism*, *12*, 57–70.

Paul, R. J., Wachsman, Y., & Weinbach, A. P. (2011). The Role of Uncertainty of Outcome and Scoring in the Determination of Fan Satisfaction in the NFL. *Journal of Sports Economics*, *12*(2), 213–221.

Perez, L., Puente, V., & Rodríguez, P. (2017). Factors determining TV soccer viewing: Does uncertainty of outcome really matter? *International Journal of Sport Finance*, *12*(2), 124–139.

Prockl, F., & Frick, B. (2018). WAGE DETERMINATION IN A REGULATED LABOR MARKET: EMPIRICAL EVIDENCE FROM MAJOR LEAGUE SOCCER. Working Papers Dissertations. (Paderborn University, Faculty of Business Administration and Economics).

Rottenberg, S. (1956). The baseball players' labor market. *Journal OfPolitical Economy*. (64), 242–258.

Solberg, H. A., & Gratton, C. (2004). Would European soccer clubs benefit from playing in a Super League? *Soccer & Society*, *5*(1), 61–81.

Szymanski, S. (2003). The economic design of sporting contests: a review. *Journal of Economic Literature*. (41), 1137–1187.

Szymanski, S. (2006). The Economic Evolution of Sport and Broadcasting. *The Australian Economic Review*, *39*(4), 428–434.

UEFA (2021). New format for Champions League post-2024: everything you need to know. Retrieved from https://www.uefa.com/uefachampionsleague/news/0268-12157d69ce2d-9f011c70f6fa-1000--new-format-for-champions-league-post2024-everything-you-need-to-know/.

Wagner, U., Storm, R. K., & Cortsen, K. (2021). Commercialization, Governance Problems, and the Future of European Football—Or Why the European Super League Is Not a Solution to the Challenges Facing Football. *International Journal of Sport Communication*, *14*(3), 321–333.

Weinbach, A. P., & Paul, R. J. (2008). Price Setting in the NBA Gambling Market: Tests of the Levitt Model of Sportsbook Behavior. *International Journal of Sport Finance*, *3*(3), 137–145.

Wills, G., Tacon, R., & Addesa, F. (2020). Uncertainty of outcome, team quality or star players? What drives TV audience demand for UEFA Champions League football? *European Sport Management Quarterly*, 1–19.

VII. Appendix

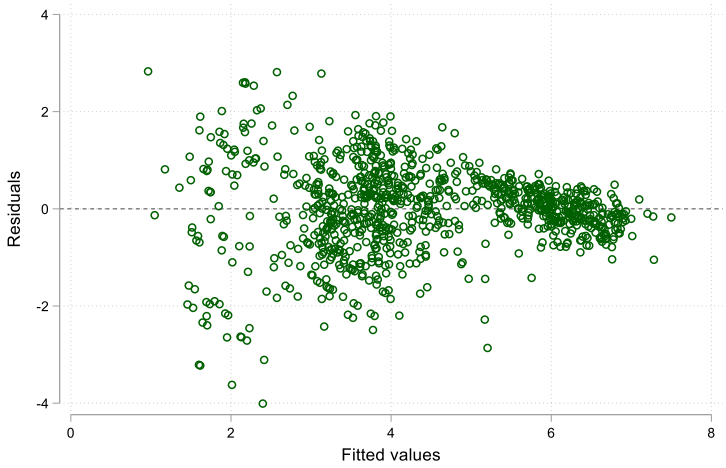

Fig. 3: Residuals LnTV (Full Model)

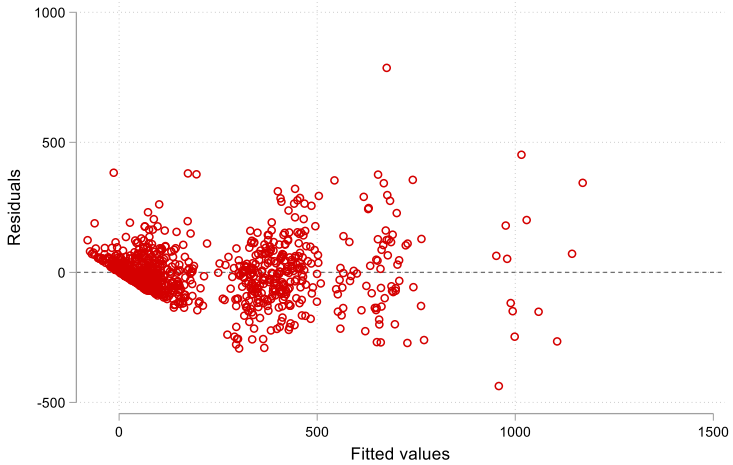

Fig. 4: Residuals wRtgall (Full Model)

Pairwise correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
(1) lntv	1.000														
(2) MVcomb	0.364*	1.000													
(3) UEFAcomb	0.403*	0.609*	1.000												
(4) SuperStars	0.519*	0.692*	0.607*	1.000											
(5) HomewinProb	-0.021	-0.012	-0.006	-0.015	1.000										
(6) HomewinProbsq	-0.052	-0.022	-0.035	-0.013	0.973*	1.000									
(7) Domestic	0.173*	-0.143*	-0.186*	-0.116*	0.025	0.038	1.000								
(8) LocalHeros	0.073*	-0.098*	-0.109*	-0.071*	-0.077*	-0.056	-0.057	1.000							
(9) meantemperatureC	-0.213*	-0.017	-0.061	-0.086*	-0.007	0.017	0.018	0.006	1.000						
(10) precipitationmm	-0.110*	0.053	-0.023	-0.049	-0.021	0.000	0.047	-0.030	0.085*	1.000					
(11) substitute	-0.233*	0.001	-0.042	-0.161*	0.101*	0.135*	0.015	0.023	0.036	0.030	1.000				
(12) Kickoff	0.093*	0.188*	0.141*	0.144*	0.140*	0.133*	0.025	0.070*	0.027	-0.039	0.458*	1.000			
(13) dayofweek	0.086*	0.060	0.055	0.070*	0.008	0.004	0.024	-0.027	0.070*	0.029	-0.090*	0.017	1.000		
(14) type	0.482*	0.263*	0.366*	0.436*	-0.016	-0.070*	-0.082*	-0.071*	-0.124*	-0.056	-0.383*	0.083*	0.212*	1.000	
(15) Channelen	0.784*	0.286*	0.318*	0.416*	-0.029	-0.066*	0.160*	0.044	-0.158*	-0.142*	-0.265*	0.062*	0.046	0.398*	1.000

** $p<0.05$*

Tab 3: Matrix of correlations

	VIF	1/VIF
MVcomb	2.306	.434
SuperStars	2.812	.356
HomewinProb	21.428	.047
HomewinProbsq	21.491	.047
Domestic	1.159	.863
LocalHeros	1.071	.933
meantemperaturec	1.376	.727
precipitationmm	1.069	.935
1.substitute	2.18	.459
2.Kickoff	3.023	.331
3.Kickoff	30.484	.033
4.Kickoff	18.079	.055
5.Kickoff	4.043	.247
6.Kickoff	22.97	.044
7.Kickoff	129.019	.008
8.Kickoff	70.139	.014
3.dayofweek	1.04	.962
6.dayofweek	3.278	.305
2.type	1.511	.662
3.type	1.243	.804
4.type	1.662	.602
5.type	3.447	.29
2.Channelen	3.222	.31
3.Channelen	4.108	.243
4.Channelen	1.161	.862
Mean VIF	14.133	.

Tab. 4: Variance inflation factors