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Welcome to the Book of Abstracts* for the 14th ESEA Conference on Sport Economics.

*Abstracts are abridged - subtitles, notation, references, technical/modelling details and econometric results are omitted.

Preface by the ESEA President

Dear Attendees of the 2023 ESEA Conference,

It is my pleasure to welcome everyone in Cork, Ireland, for the 14th ESEA Conference on Sport Economics. After last year's edition which was the first ESEA Conference in presence after the global pandemic, it is great to see that registration numbers are again on the rise. Of course, this increase is also due to the attractiveness of the host destination. We are unlikely to have a local organizer closer to the United States than this year.

When looking at the conference program, I am sure we will enjoy an interesting conference where we can discuss a variety of sports economics topics – in the sessions, but also during the coffee breaks.

I would like to extend a sincere Thank You to the Local Organizers, Robert and David Butler and Patrick Massey. They have done a wonderful job in organizing this conference and the PhD workshop which is held before the academic program.

In my roles as president and guest editor of the last two conferences, I would also like to take this opportunity to encourage all conference delegates to submit their conference papers to the Conference Special Issue of the International Journal of Sport Finance (IJSF). IJSF is ESEA's official journal and it is important that all conference attendees and ESEA members contribute to the development of IJSF and the flourishing of our field journals. The call for papers will be distributed after the conference. Moreover, I encourage the ESEA community to support our journal by submitting high quality papers and providing constructive and timely reviews.

Since these are my last few weeks as President of this organization, I would also like to take this opportunity to encourage all members to actively engage in ESEA activities and volunteer for board positions or other roles in the future. I have certainly enjoyed my last 8 years on the ESEA Board, but it is now time for colleagues to take over these responsibilities.

Yours sincerely,
Prof. Dr. Pamela Wicker
ESEA President

Time	Day 1 | Wednesday, 23 August 2023 | 16.00 - 17.30			
	1: LABOUR 1 | WW5 **Chair: *Craig Depken***	**2: SUSTAINABILTY | WW6** **Chair: *Pamela Wicker***	**3: PERFORMANCE 1 | WW8** **Chair: *Pat Massey***	**4: MANAGEMENT & OWNERSHIP | WW9** **Chair: *Giambattista Rossi***
16.00	The Price of Pressure: An Analysis of Employee Performance Consistency and Pay | ***Marco Henriques Pereira, Steffen Q. Mueller, Markus Lang & Helmut Dietl***	Soccer and CO2: Are Smaller Countries More Sustainable International Football Tournament Hosts? | ***Tracy Bradfield, Robert Butler, David Butler & Conor McCarthy***	Football is Not Just About Sporting Talent | ***Alice Aguiar-Noury & Garcia-del-Barrio***	Luck and Managerial Dismissals – The Influence of Opponent Player Injuries on Coach Retention in European Football | ***Fabienne Jedelhauser, Raphael Flepp & Egon Franck***
16.30	Wage Disparity and Team Performance: Evidence from European Football | ***Richard Buttimer, Craig Depken, Alex Frei & Tomislav Globan***	Football Fans' Willingness-to-Pay for Sustainable Merchandise Products | ***Katrin Scharfenkamp & Pamela Wicker***	Different Strokes: Winning Strategies in Women's and Mens' Big Bash Cricket. | ***Pat Massey & Vincent Hogan***	The Influence of PROFUT Regulation on Brazilian Football Clubs Earnings Quality | Jose Alonso Borba & ***Giambattista Rossi***
17.00	Do Sports Analytics Affect Player Pay? Insights from New Contract Data | ***Alex Farnell, David Butler & Rob Simmons***	Evaluating the Economic Costs and Benefits of Adopting the United Nations Sustainable Development Goals for International and National Sport Organizations | ***Joel Maxcy, Jean-Jacques Gouget, & Jean Francois Brocard***	The Impact of High Temperatures on Performance in Work-related Activities; the Case of Professional Tennis | ***Jan Van Ours & Matteo Picchio***	Do Football Owners Matter? The Case of Premier League | ***Luis Carlos Sanchez, Angel Barajas & Patricio Sanchez-Fernandez***

1: LABOUR 1 | WW5: 16.00

The Price of Pressure: An Analysis of Employee Performance Consistency and Pay | ***Marco Henriques Pereira, Steffen Q. Mueller, Markus Lang & Helmut Dietl***

Employers often consider consistency in working performance a desirable employee trait that warrants compensation because consistent labor performance reduces monitoring costs (Bodvarsson & Brastow, 1998). Likewise, consistent working performance reduces outcome variability, allowing for better production planning (Podsakoff & MacKenzie, 1997). However, Lazear's theory (1998) postulates an "upside potential to risky workers," leading employers to more highly reward inconsistent performers, as they may occasionally deliver exceptionally high labor performance. Unlike traditional labor markets, professional sports markets enable efficient and low-cost monitoring of worker productivity. Additionally, in team sports, players with high but unpredictable performance levels can be substituted during a game and do not have to be included in the starting line-up. Tournament theory also suggests that performance inconsistency can be advantageous in situations where the reward structure is heavily skewed towards top performers (Hood, 2008; Shmanske, 2007). Consequently, sports markets may offer salary premiums for consistent performers as well as for inconsistent performance outliers (Bodvarsson & Brastow, 1998; Deutscher & Büschemann, 2016). The existing literature on salary determinants in sports markets is extensive, yet only a handful of studies explore the influence of performance consistency on player salaries. These studies present mixed results: Some findings suggest salary premiums for consistent performance in the National Basketball Association (NBA) (Bodvarsson & Brastow, 1998; Deutscher et al., 2017) and Italian soccer (Özdemir et al., 2022), while others reveal a preference of inconsistent performance in Major League Baseball (Bollinger & Hotchkiss, 2003) and German soccer (Deutscher & Büschemann, 2016). It is widely recognized that excelling in high-pressure situations is crucial in player evaluation and compensation (Cao et al., 2011; Cohen-Zada et al., 2017; Hickman & Metz, 2015). However, prior research on performance consistency and compensation has not considered the potential impact of player performance under pressure. This study aims to address this gap. Moreover, earlier studies have assumed a linear relationship between performance consistency and compensation. In contrast, our research innovates by examining the possibility of a U-shaped relationship, which would indicate the coexisting premiums for both consistent and inconsistent performance.

This study represents the first attempt to evaluate and differentiate the effects of performance consistency and the capacity to perform under pressure on player salaries. To this end, we analyze game date from the United Kingdom's top soccer division (Premier League) spanning the 2018/19 to 2021/22 seasons. Our dataset comprises performance, game, salary, and contextual information from 369 players covering 28.801 games, which we consolidate at the player-season level, resulting in a 4-year panel dataset. We employ linear regression to predict annual player salaries, taking into account the mean and variation of player performance metrics in both high-pressure (HP) and low-pressure (LP) games.. In our analysis, we compute the average performance ("WhoScored" rating) for each player by season, separately for high-pressure and low-pressure games. To differentiate between these types of games, we initially consider away and home games, as away games are typically associated with substantially higher pressure levels than home games (Carron, 1992; Caselli et al., 2022; Garicano et al., 2005; Glamser, 1990). In subsequent analyses, we will explore several alternative performance measures and game pressure criteria. Furthermore, we will consolidate these alternative performance measures using principal component analysis.

Our preliminary findings indicate that superior performance in high-pressure games significantly contributes to higher player salaries. A key insight from our study reveals the existence of a salary premium for both highly consistent and highly inconsistent performance for high-pressure games, resulting in a U-shaped relationship between performance consistency and player salaries. In contrast, for low-pressure games, we do not find evidence supporting a premium for either consistent or inconsistent performance. Our study serves as an initial effort to shed light on the potential effects of productivity consistency under pressure on compensation. To gain a comprehensive understanding of the prevalence of salary premiums for consistent and inconsistent performance, further analyses are needed. These should examine the impact of situational performance-pressure relationships within games. In addition to providing new insights into possible implications of performance consistency for sports leagues and industries other than soccer, our findings may assist in further understanding how stressful situations and pressure can affect worker productivity and competitiveness and thus potentially have broad implications for questions of labor market design. First, we contribute to a vast literature concerned with productivity and compensation in general (T. Dohmen & Falk, 2011; Franceschelli et al., 2010; Lazear, 2000) and the extent to which pressure can affect worker performance in particular (Cao et al., 2011; Cohen-Zada et al., 2017; T. J. Dohmen, 2008; Hickman & Metz, 2015). Moreover, our study connects to research concerned with superstar effects (Coates et al., 2016; Franck & Nuesch, 2010; Hausman & Leonard, 1997) and contributes to the literature investigating the extent to which sports results are affected by fan support (Böheim et al., 2019; Caselli et al., 2022; Scoppa, 2021).

1: LABOUR 1 | WW5: 16.30

Wage Disparity and Team Performance: Evidence from European Football - *Richard Buttimer, Craig Depken, Alex Frei & Tomislav Globan*

The relationship between wage disparity and team performance has been the focus of hundreds of empirical studies since the early 2000s. The most fruitful analysis has been in sports, where wages are often publicly available (especially in North America) and team productivity is clearly defined, publicly available, and easily compared across teams and years. However, a relative lack of data has hindered research in wage inequality and team performance in European football. Using recently obtained salary data describing all players in nine major European leagues and North America's Major League Soccer for the 2013/14-2021/22 seasons, we test the relationship between wage inequality and team performance, measured as performance points, wins, losses, draws, goals scored, goals allowed, end-of-season ranking, and end-of-season relegation.

Our preliminary results suggest that club salary improves team performance but at a decreasing rate. Also, it appears that wage disparity helps club performance but at a decreasing rate. These results suggest that there is an interior solution to total wage and wage disparity that can maximize club performance on the pitch. We intend to pursue this question and to compare clubs in the various leagues to the estimated optimal mix of total wages and wage disparity. Furthermore, we intend to split the total team wage disparity into wage disparity of three squads: defenders, midfielders, and attackers. We will then test if there are different impacts of these three wage disparities on total team performance and on defensive and offensive performance.

1: LABOUR 1 | WW5: 17.00

Do Sports Analytics Affect Player Pay? Insights from New Contract Data - *Alex Farnell*, *David Butler* & *Rob Simmons*

The question of what factors determine earnings has long interested economists. Sports labour markets offer a particularly attractive setting to pose such a question owing to the availability of data on wages and performance. In recent years, much has been written on the growth of sports analytics, in particular their effects on team performance (e.g. Weimar and Wicker, 2017). Yet relatively little is known about how (or if) advanced performance metrics deliver salary returns to players. This study attempts to fill this gap by analysing the determinants of footballer's salaries. In particular, we make two novel contributions. The first is to carry out analysis only on a set of players who have recently signed new contracts. The second is the use of a far wider set of performance metrics than has been used in previous literature examining footballer's salaries. We view using players in the first year of their contract as an important contribution for two reasons. A player's salary over the course of a multi-year deal will typically be determined at the point of signing a contract. As a result, to say that salary in any season t of a multi-year contract, is a function of performance in season t-1 (as is the common approach in wage equations), might be a misspecification. Moreover, in a principal-agent setup, a player's performance typically varies over the course of a multi-year contract (Frick, 2011) owing to moral hazard. As such, the salary in the first year of a new contract should show a much tighter relationship to the performance of the player in the season before the new contract was signed. This would be the most recent and relevant information the team has during contract negotiations. The secondary contribution is to ask just what information team owners / decision makers might use during contract re-negotiations. In particular, to what extent do they make use of the ever-growing availability of performance statistics? We outline some of our extensive measures in the following section.

Our data consist of football players who signed new contracts (n=992) over the four seasons from 2018-19 to 2021-22 in the English Premier League and the Italian Serie A (excluding goalkeepers from analysis). We then match these players to a large set (approx. 200) of performance metrics from FBRef.com. These include 'standard' measures e.g., Goals, Assists and Pass Completion Percentage, along with 'advanced' metrics such as progressive distance, pressures, expected goals, key passes, types of passes, and shot-creating actions. In short, the measures capture a large combination of offensive and defensive contributions. We also have information on player experience including minutes played in the top 5 European Leagues, the player's age, and whether they are a full international. The model is specified twice; once capturing individual performance metrics, and another capturing team-level metrics. To guide us in the selection of which performance measures to include, we apply lasso regression (least absolute shrinkage and selection operator). A lasso regression applies a penalty term to a standard OLS minimisation problem, where for certain variables, a large penalty term will shrink the associated coefficient to zero. We also investigate effects along the distribution of earnings using unconditional quantile regressions (Firpo et al., 2009).

Initial results from models reveal the following. The effect of age follows the expected concave pattern in salary, though our estimated peak salary occurs in a player's early 30's. This is slightly higher than estimates reported by many previous studies, which we expect is due to only including newly signed contracts in the data. A club might offer a player a new contract in the year of their peak performance, and we only observe their salary in the following year. Being a full international player results in a salary premium of around 25%, while an additional 1000 minutes of experience in the top 5 European leagues results in a salary premium of around 0.03%. Average salaries are higher in the Premier League than Serie A, while for position dummies, the salary rankings are Forwards, Midfielders then Defenders. Many of the detailed performance metrics are not significant in the salary models, though there are some important exceptions. Individual level variables that enter significantly across multiple specifications include non-penalty goals minus expected goals, assists minus expected assists, shot-creating actions, long pass completion percentage, and through balls. All those variables enter with the expected positive coefficient. Team level variables that enter significantly include expected goals while on the pitch (>0) and expected goals against while on the pitch (<0). While more investigation is needed into these models, there is preliminary evidence that players are paid both for individual contributions, and contributions to team level outputs. Many, but not all of these variables appear significantly across most quantiles of the salary distribution. Non-penalty goals minus expected goals is significant at quantiles equal to and above the median, while completed long pass percentage is significant across the salary distribution. In the team models, expected goals while on the pitch is significant across the salary distribution. We intend to progress the paper by investigating whether the outcomes that we find are significant for pay also matter for team performance (i.e. wins). Standard economic theory would suggest that teams should pay for what generates them wins. We also intend to run models separately across different positions (forwards, midfielders and defenders) since we would expect that salary returns to different performance measures would differ across positions.

2: SUSTAINABILITY | WW6: 16.00

Soccer and CO2: Are Smaller Countries More Sustainable International Football Tournament Hosts? | *Tracy Bradfield, Robert Butler, David Butler & Conor McCarthy*

This research explores the impact of football teams' air travel on carbon dioxide (CO^2) emissions during major international football tournaments between 1992 and 2022. We consider the FIFA World Cup and UEFA European Championships tournaments, for male players, during this 30-year period. These tournaments required qualifying teams to travel to a host country and attract tens of thousands of supporters to stadiums. Depending on the success of the team, this can range from about 10 days up to 5 weeks. The environmental damage caused by air travel is widely known. The global football industry is part of this problem and is producing more than 30 million tons of CO^2 every year. The decision of where to host major international competitions is a significant contributor to these emissions as both UEFA and FIFA have radically altered their traditional hosting methods in recent years. FIFA has tended to use more remote locations (further from traditional host locations in Europe) such as Korea, Japan, South Africa, and Qatar, and has abandoned the policy of hosting the event in a UEFA member every 8 years. Furthermore, countries of great geographic size – for example the United States of America (USA) and Russia – have both hosted the FIFA World Cup since 1994, with the USA set to host the event again in 2026. FIFA has also introduced the co-hosting of the World Cup by more than one nation, a policy adopted by UEFA first in 2000 and continued in 2008 and 2012. In 2021, UEFA abandoned the traditional of a host nation, in favour of multiple host cities spread throughout Europe. Coupled with the great geographical spread of host cities and larger host nations, both the FIFA World Cup Finals and UEFA European Championships Finals have substantially increased the number of teams at their tournaments. In 1992, just 8 UEFA members competed at the Finals in Sweden, while 24 countries headed to the USA for the World Cup in 1994. In 2020, 24 countries appeared at the delayed 2020 UEFA European Championships and 32 countries competed at the World Cup in Qatar in 2022. The World Cup in 2026 will consist of 48 qualifying teams. This means the World Cup Finals will have expanded by 100% since 1994, while the European Championship Finals will have increased in size by 200%. Given the increased team travel of this magnitude and the impact of CO^2 emissions on the sustainability of the planet, it is both timely and important to examine the impact that these tournaments are having on CO^2 emissions. Proper intervention and planning are essential for the leading authorities to minimize the carbon footprint due to travelling to major international football events (Paché, 2020).

The Stockholm Environmental Institute estimates that the 2014 World Cup in Brazil produced over 2.7 million tons of CO^2, primarily due to air travel (Andersson and Garcia, 2014). To assess the impact of the competing teams only, we employ a scenario analysis approach taken by Butler and Massey (2019). We calculate the various CO^2 emissions of each travelling team at each major tournament between the FIFA World Cup at Italia '90 and Qatar 2022. Data for this research are divided into two distinct groups and are drawn for a variety of sources. The first group is data on football participation at the FIFA World Cup Finals and the UEFA European Championship Finals between 1992 and 2022. Data for both competitions are extracted from The Rec. Sport. Soccer Statistics Foundation (RSSSF). These sources include all teams playing at the finals, dates, locations, and number of games played during the tournament. The second group of data comes from environmental sources. Specially, we collect data on long haul flight CO^2 emissions. The data gathered cover the years 1990 to 2022 and estimate long haul flight CO^2 emissions per passenger, per kilometre. Data are sourced from the European Environmental Agency and are triangulated with other sources. We create a CO^2 emissions index per team and per tournament, and we will compare the environmental impact of each major football tournament.

2: SUSTAINABILITY | WW6: 16.00

Soccer and CO2: Are Smaller Countries More Sustainable International Football Tournament Hosts? | ***Tracy Bradfield, Robert Butler, David Butler & Conor McCarthy***

Our preliminary findings indicate that, despite improvements in aeroplane environmental standards and a marked reduction in the level of CO^2 emissions per passenger, per kilometre over the course of the past three decades, major sporting events like the FIFA World Cup and UEFA European Championship are having a significant carbon footprint. We demonstrate that this environmental impact has been exacerbated by four key factors. First, the movement of FIFA from traditional host locations, especially those among UEFA members, has resulted in the hosting of World Cup tournaments in locations further from central Europe. From 1958 to 2006, FIFA adopted a rotation policy for hosting, with every second tournament held in Europe. This has now ended. Three reasons are cited for this. Broadcasting revenue is now more important than ticket sales. FIFA is trying to diminish the influence UEFA (Europe) has on world football and there is a desire to spread the game globally. This includes recent awarding of tournaments to hosts such as South Africa, Japan, Korea, Brazil and Qatar. The net effect of this decision has been an increase in travel for qualifying countries and a knock-on effect on CO^2 emission. Second, tournaments have been hosted in countries of significant land mass on a more frequent basis such as The United States of America, Brazil, Ukraine, and Russia. These host have exacerbated the problem of CO^2 emissions from air travel, by locating match stadiums across an extended geographical area and in remote parts of their country. Third, Euro 2020 took the unique step of removing a host country and instead locating the tournament across multiple European cities and one Asian city. This created CO^2 emissions from travel far greater than the normal level when teams are in a single country. Lastly, the expansion in the number of finalists from 8 to 16, to 24 and 32 has increased the number of games and travel journeys. The impact of these has been obvious and significant increased CO^2 emissions from each tournament after an expansion. Ironically, while the 2022 tournament in Qatar received widespread criticism for non-footballing reasons, smaller countries like Qatar with efficient transportation systems and a smaller population are better equipped to manage the logistical challenges of hosting a significant event, leading to lower carbon emissions.

2: SUSTAINABILITY | WW6: 16.30

Football Fans' Willingness-to-Pay for Sustainable Merchandise Products | *Katrin Scharfenkamp & Pamela Wicker*

The United Nations (UN) have developed 17 sustainable development goals (SDGs), with goal no. 12 ensuring sustainable consumption and production patterns and goal no. 13 speaking to the combat of climate change and reducing its impacts. Professional football clubs and leagues have recognized the need to promote sustainable development and engage in sustainable activities. For example, a number of football clubs have signed the Sports for Climate Action Framework, hence agreeing with the target of reducing carbon emissions and becoming more environmentally sustainable (United Nations Framework Convention on Climate Change [UNFCCC], 2022). Moreover, the German Football League (DFL) included sustainability in their list of licensing criteria, hence forcing Football Bundesliga to report about environmental and social sustainability and enhancing their efforts to become more sustainable (DFL, 2021). One area where football clubs have the decision making power to change something and become more sustainable is their merchandise products. In many clubs, the products of their merchandise shop are produced cheaply in Asia and shipped to Europe afterwards, before they are sold across Germany or mailed again to buyers and fans around the globe. Merchandise sales are one pillar of clubs' commercial revenues, together with sponsorship, catering, and other operational revenues. For many football clubs, they make up a substantial share of their overall revenues, even exceeding revenues from the sale of broadcasting rights in some cases (Deloitte, 2019). Overall, the production and distribution of these products tends to be on the lower end of the social and environmental sustainability spectrum, while being relevant for clubs' economic sustainability. The resulting question of making merchandise products more socially and environmentally sustainable is, therefore, also an economic one, as sustainable production is typically associated with higher production costs such as local labor costs. One option is that fans bear the additional costs and pay more for sustainable products of their club. The present study addresses this question by examining fans' willingness-to-pay (WTP) for socially and environmentally sustainable merchandise products. The research context is one German Football Bundesliga club (Arminia Bielefeld) who aims at providing sustainable products to its merchandise shop, but attempts to get an idea of fans' interest in such products and their WTP for them. The focus is on two of the most-sold products, a t-shirt and a hoodie, which would be locally produced under more social labor conditions. This context leads to the following two research questions: (1) how much are fans' willing to pay for socially and environmentally sustainable products? And (2) what factors are associated with fans' WTP? Such questions have largely been neglected in existing monetary valuation and WTP research, respectively (Orlowski & Wicker, 2019). Only a few studies were conducted at the intersection of sport ecology and finance, examining the WTP for environmental initiatives in grassroots sports clubs (Thormann & Wicker, 2021), the WTP for offsetting carbon emissions at sport events (Lintumäki et al., 2022; Triantafyllidis & Kaplanidou, 2018), and the intentions of green donations of sport event participants (Triantafyllidis & Kaplanidou, 2019).

Quantitative data were collected using an online survey of football fans and spectators of Arminia Bielefeld from April to June 2022. The link to the survey was provided on the club's social media platforms, in newsletters, and on the website of the collaborating university. Overall, 1,021 respondents completed the survey and 1,019 observations could be used for the empirical analysis. The survey included a number of questions measuring past purchase of merchandise products, environmental concern (Kilbourne & Pickett, 2008; Paul et al., 2016), environmental knowledge (Ko & Jin, 2017), team identification (Wann & Branscombe, 1993), and respondents' sociodemographic characteristics (gender, age, education, income). The employed scales have acceptable reliability, with Cronbach's alpha being 0.893 (environmental concern), 0.773 (environmental knowledge), and 0.931 (team identification). Mean indexes were computed for these three constructs. WTP was assessed using the contingent valuation method (Orlowski & Wicker, 2019). At the heart of the survey was a CVM scenario, with respondents randomly receiving either the version with a t-shirt or a hoodie. It started with informing respondents about societal expectations towards sport organizations to become more socially and environmentally sustainable and the implementation of sustainability criteria in the DFL's licensing criteria from the 2023/24 season onwards, forcing clubs' business processes to become more sustainable. Then it was assumed that given these developments, Arminia Bielefeld wants to become more socially and environmentally sustainable and that sustainably produced products will be offered in the fan store in addition to conventionally produced ones. It was supposed that respondents would want to purchase a t-shirt/hoodie (current price €25/€60), with a socially and environmentally sustainably produced t-shirt/hoodie being offered in addition to the conventional product. The sustainably produced t-shirt/hoodie would look similar and be of the same quality as the regular t-shirt/hoodie. Then respondents were asked for their level of interest in this sustainably produced t-shirt/hoodie on a five-point scale and their likelihood of purchasing the product at different prices. Thus, WTP was assessed using a payment card format (Orlowski & Wicker, 2019), which was selected to reduce hypothetical bias (Whitehead & Wicker, 2019).

2: SUSTAINABILITY | WW6: 16.30

Football Fans' Willingness-to-Pay for Sustainable Merchandise Products | *Katrin Scharfenkamp & Pamela Wicker*

The answers were converted into a continuous variable, with respondents clicking on 5 (very likely) receiving the respective Euro value and respondents not clicking on 5 for any price being assigned WTP=€0. Two WTP variables were calculated, a WTP dummy and a logged WTP variable reflecting the amount of WTP of those having a positive WTP>0. The empirical analysis starts by providing descriptive statistics to give an overview of the sample structure and respondents' WTP (and to answer the first research question). To answer the second research question, two regression models were estimated. The first is a logit model explaining the likelihood of respondents stating a positive WTP. The second is a log-linear model estimating the correlates of the amount of WTP (of those respondents with a positive WTP). The independent variables include environmental concern, environmental knowledge, team identification, and respondents' sociodemographic characteristics.

The data cleaning and preparation is currently ongoing. Initial descriptive results show that 29.5% of respondents are female. Average age is 29.2 years and average income is €1,664. Concerning educational level, 26.7% of respondents have lower education (below A-levels), 42.5% have A-levels, and 30.8% a university degree. The mean values for environmental concern are 4.25, 3.57 for environmental knowledge, and 4.12 for team identification. Most respondents (81.9%) have purchased merchandise products of the club in the last two years. Half of the sample received the t-shirt and the hoodie scenario. Interest in the sustainable t-shirt is 4.16 on average and 3.97 for the hoodie. Overall, 57.1% of respondents stated a positive WTP. Average WTP of those respondents with a positive WTP is €29.86 for a sustainable t-shirt and €65.50 for a sustainable hoodie. The results of logistic regressions indicate that environmental concern and past consumption have a positive association with the likelihood of having a positive WTP for a sustainable t-shirt, while environmental knowledge, team identification, and all sociodemographics are insignificant. The likelihood of purchasing a sustainable hoodie is positively affected by environmental concern, environmental knowledge, university education, and income, while age has a negative association. In the log-linear models, environmental concern, environmental knowledge, past consumption, and female gender are positively associated with the amount of WTP for a sustainable t-shirt, while team identification has a negative effect. WTP for a sustainable is only significantly affected by environmental concern, with higher concern increasing WTP.

2: SUSTAINABILITY | WW6: 17.00

Evaluating the Economic Costs and Benefits of Adopting the United Nations Sustainable Development Goals for International and National Sport Organizations | *Joel Maxcy, Jean-Jacques Gouget, & Jean Francois Brocard*

This project is part of a larger 5-part ERASMUS (EU) grant on Sustainable Sport Management (SSM). The aim of this portion of the study is to provide the conceptual and methodological underpinnings of research activities for the purpose of delivering solutions to the problem of evaluating the net benefits of sustainability programs in sport organizations. The key research question to be addressed is gauging the financial and intangible consequences of sport organizations' programs, which proclaim to produce environmental or social outcomes. The main research focus is the determination a cost-benefit analysis for the implementation of sustainability strategies by national/international sports organizations. These strategies consist of taking into account the seventeen Sustainable Development Goals (SDG) of the United Nations Agenda, 2030. This research questions are formulated in three steps as follows: 1.What are the main characteristics of sustainability strategies initiated by sports organizations? 2.What are the principal assessment tools available and which ones are the most suitable? 3.Which organizations should be selected to have a representative view of sustainability strategies? The literature on evaluating benefits by which to provide suitable tools for evaluating the costs and benefits of sustainability actions is quite limited. From management there are two--the Tonello model and the Yuthas-Epstein model. The measurement of costs benefits and impacts of sports and sporting events is challenging for economists as external factors which are not easily quantified in monetary units must be accounted for (Gouguet & Barget, 2006). Economists have also evaluated environmental values with comprehensive cost-benefit analysis (e.g., Barbier, Markandya, and Pearce, 1990) and Pearce, D. (1998). Likewise the contingent valuation method (CVM) has been specifically applied to sports, e.g., Walton, Longo, and Dawson, (2009) and Johnson and Whitehead (2000). A solution for quantifying a valuation of externalities is establishment of shadow prices. These can be grouped into three categories: 1.Substitution markets. The transport cost method has been most widely used in the field of sports economics. 2.Hypothetical markets: or the contingent valuation method (CVM) This method has been used to assess the non-market value of sporting events. 3.Indirect methods: the objective is to calculate a dose-response relationship and then to carry out a monetary evaluation of the physical effects. These methods have been used in the context of the relationship between sport and health. The principle is always the same: the preference of individuals is used as the basis for the measurement and it is assumed that such preferences translate into willingness to pay. The amount of money that people are prepared to spend on a good or service becomes indicator of the utility attached to it. The sum of individual willingness to pay provides the total economic value of the good or service under consideration.

Defining a model to measure the costs and benefits of a sustainability strategy raises two problems. First, a monetary valuation is not necessarily relevant to measure a sustainability strategy and it does not cover all possible spectrums. Second, the evaluation of an organization's sustainability strategy is very challenging on multiple levels. To conduct this study, we have proposed a dashboard, which groups several themes related to the United Nations Sustainable Development Goals. For example, consider effects on health, education, environment, and employment. Each theme makes it possible to incorporate the corresponding SDGs. Moreover, assessing the entirety of a sustainability strategy is a colossal task. It is therefore relevant that for each themes, the relevant indicators are defined. Two questions arise: 1.How many indicators should be used to correctly characterize the costs and benefits of the chosen strategy? 2.What types of indicators should be chosen? Regarding the number of indicators, specialists agree that this number must be limited. Regarding the type of indicators, we include a mix between monetary and non-monetary, quantitative or qualitative, and simple or composite indicators. To begin the analysis, we will employ a survey study, used in the preceding section the full grant - Implementation of Sustainability Goals. Responses measured on a 5-point Likert scale, are asked for the purpose of revealing useful information. Survey responses will allow the assessment whether or not organizations engage in certain sustainability activities, and as well as who comprises the major stakeholders in the organization's sustainability program. Nonetheless, the survey is not structured to discover any specific information on the costs, values or external effects of such activities as perceived by the surveyed organizations. This information, along with the perception of benefits will be addressed through a follow up case study portion of the analysis described below.

2: SUSTAINABILITY | WW6: 17.00

Evaluating the Economic Costs and Benefits of Adopting the United Nations Sustainable Development Goals for International and National Sport Organizations | ***Joel Maxcy, Jean-Jacques Gouget, & Jean Francois Brocard***

The scope must remain modest and in that regard we have chosen three basic types of organisations and representatives from each. •Sport Club: Seattle Kraken, NHL USA •National Federation: USA Track & Field, French Sailing Federation •International Federation: World Athletics. The unit of analysis, as defined in other components of this study is the sport organisation – both national and international. We are also interested in examining a particular unit of a larger organization to gauge their reaction to the broader organizational sustainability goals and practices. For example, a club within the larger league organization. In order to carry out in-depth case studies that allow us to collect additional information on the costs of implementing the strategy and its benefits, both monetary and non-monetary. The collection of this information will allow the elaboration of a dashboard model.

3: PERFORMANCE 1 | WW8: 16.00

Football is Not Just About Sporting Talent | *Alice Aguiar-Noury & Garcia-del-Barrio*

This paper deals with the labour market of professional football players, paying particular attention to the role of media exposure and the club's brand. The empirical analysis aims to deepen the understanding of the main factors affecting the clubs' decisions relative to investment in talent and work compensation. Specifically, we study to what extent the rewarding strategies of football clubs involve remunerating the players' media appeal and popularity (i.e., off-field skills) in addition to on-field sporting performance. The wage equations include, along with the other regressors, the historical sporting achievements and the media visibility of the clubs. In the sports industry, understanding the revenue source structure of the firm is important for analysing wage remuneration. Aguiar-Noury & Garcia-del-Barrio (2022) provide evidence that the capacity of the clubs to generate income is determined by past sporting performance, but also by historical achievements and the ability of the team's squad to attract media attention. Carmichael et al. (2017) remark that an increasing share of revenues comes from new revenue sources, mainly TV and media rights, a feature intensively affecting the top European leagues; these revenue sources are associated with the team's popularity among fans, that is, clubs that attract more visibility will demand higher compensation. The same effect is perceived for prominent players; for instance, Terry et al. (2022), in studying the compensation of star employees for Major League Baseball, support the importance of visibility to define an employee as a star. Pawlowski & Anders (2012) refer to the people's preferences for renowned sport brands and show that even if the clubs' economic outcomes are mainly driven by sport achievements, which depend on talent investment, the brand value of the clubs also plays a significant role in this regard. Besides, European football may have become like Baseball in the Moneyball era (Wang & Cotton, 2018, and Wolfe et al., 2006) a prolific field where to explore innovative methods of performance and sport outcomes. Naturally, the clubs that can generate higher revenues tend to pay higher salaries (Brown & Jepsen, 2009) and to carry out higher investments in hiring sport skills (Barajas et al., 2005). At the same time, the clubs that pay higher wages generally accumulate more talent, leading to higher sport success and more promising economic perspectives.

Our empirical strategy is inspired by Szymanski and Smith (1997) and following the approach developed by Carmichael et al. (2011); also, we present econometric models that follow studies showing that higher talent, captured through the clubs' annual wages, implies better sporting performance and achievements (Szymanski & Kuypers, 2000; Forrest & Simmons, 2002; Gerrard, 2006; Barajas & Rodriguez, 2010). Our empirical analysis covers seasons from 1995/1996 to 2015/2016, for the Premier League (England) and La Liga (Spain); seasons 2004/2005 to 2015/2016 for Serie A (Italy); and seasons 2009/2010 to 2015/2016 for Ligue 1 (France). Several panel data analyses are conducted for the aggregate sample and each of the four domestic leagues separately. We hypothesise that, in addition to on-field sports talent, there are skills as the ability to draw attention from the public, significantly recompensed in the sports labour market. Also, we study if higher historical sport status requires the clubs to settle a larger wage bill to compensate their players.

The empirical analysis provides evidence that, in addition to sporting skills, off-field skills are valuable assets for clubs, namely, media visibility and the club's brand status. First, our estimations confirm the existence of a positive and strong relationship between spending on football players' talent and past domestic performance. Second, the results show that, ceteris paribus, the wage bill with which the teams remunerate the players increases with the historical sporting status. Moreover, the bigger the historical status of the clubs, the smaller the influence (on wages) of performances in domestic competitions and the UEFA Champions League. It appears to be the case that clubs with stronger brand status pay higher salaries given that they are consolidated brands. Another major finding is the fact that the ability of the team's roster to attract media attention has a positive and statistically significant impact on annual wages, which presumably derives from the fact that media exposure is a significant revenue source. Concerning the main hypotheses under scrutiny, the estimations by leagues yield conclusions that are the same as the ones obtained for the whole sample. It means that little discrepancies exist among the four European Leagues studied, regarding how clubs remunerate talent.

3: PERFORMANCE 1 | WW8: 16.30

Different Strokes: Winning Strategies in Women's and Mens' Big Bash Cricket. | *Pat Massey & Vincent Hogan*

Our paper employs a unique dataset of over 800 matches over eight seasons to analyse winning strategies in Australia's Women's (WBBL) and men's Big Bash (BBL) cricket leagues. Cricket has undergone a number of changes over the past sixty years. New shorter match formats have been introduced and operate alongside the traditional format which involves matches that run over several days. Initially one day matches were introduced in the early 1960s, while an even shorter format known as Twenty20 or T20 was launched in 2003. The financial success of the Indian Premier League (IPL) T20 competition prompted the establishment of similar leagues for men at least, in most of the leading cricket nations. Despite a long history of women's cricket, women's' T20 leagues developed more slowly. For example, while the IPL was launched in 2008, a women's version only commenced in 2023. In Australia the BBL was launched in 2011 and the WBBL followed in 2015, although there had been a women's T20 cup competition since 2009. The WBBL is widely regarded as the leading women's T20 cricket league. There is a considerable literature analysing factors that contribute to teams' chances of winning matches in various sports. (See, for example, Ortega et al. 2009). The contribution of batting, bowling, and fielding inputs to teams' ability to win matches in cricket within a production function approach has been widely explored in the sports economics literature, although there have been few studies involving T20 matches which is the focus of our paper (Cannonier et al., 2015). Schofield (1988) found that bowling generally had a greater impact on match success than batting in both one and three day matches in England. In Australia, an attacking batting strategy, combined with a defensive bowling strategy, was found to maximise the chances of winning. Batting was marginally more important than bowling in New Zealand (Bairam et al., 1990). Lohawala and Rahman (2018) report that defensive batting and attacking bowling were important for winning 5-day Test (international) matches but a balance of defensive and attacking batting and bowling were required for success in one day internationals (ODIs). Swartz (2011) argues that T20 is "markedly different" from other cricket formats. Depken & Rajesekhar (2010) find that T20 requires different strategies and tactics to Test matches . T20 also favours a more aggressive style than longer (50 over) one day matches. The risk of a team being bowled out without using the full allocation of overs is considerably lower in a 20 overs per side than in a 50 overs per side match. Cannonier et al. (2015) find that attacking batting and bowling represent the best strategies for winning 50 over ODIs and T20 internationals. In contrast they report that a combination of attacking batting and defensive bowling is more successful in the IPL T20 league. Davis et al., (2015) however, suggest that teams batting second in T20 matches wait too long to increase their level of batting aggressiveness.

We adopt a similar approach to Cannonier et al. (2015) to model teams' ability to win matches as a function of various inputs. In line with Cannonier et al. (2015) we categorise batting and bowling as either attacking or defensive. We include fielding because as Cannonier et al. (2015) point out fielding input is important particularly in the shorter form of cricket where limiting opponent's scoring may be critical, although it has been ignored in many previous studies. As in Cannonier et al. (2015) we estimate a conditional logit model of team winning as a function of measures or team prowess in batting bowling and fielding as well as well as pre-match team characteristics (such as relative strength). We also control for match level fixed effects. We obtained data on all BBL and WBBL regular season matches played between 2015/16 and 2022/23 from the CRICINFO website www.cricinfo.com. This gives us a total dataset of 832 matches (384 BBL and 448 WBBL) over eight seasons. (The difference in the number of matches between the two leagues is due to differences in fixture schedules in early years). As in Cannonier et al. (2015) we categorise runs scored by each team as BOUND (% of total runs scored from boundaries – four's and sixes) and non-boundaries (NBR, runs scored other than from boundaries less extras as % percentage of total runs). BOUND is defined as a measure of attacking batting while NBR is a measure of defensive batting. Similarly, for bowling we define opposition wickets per over (OWPO) as % of total overs bowled as measuring attacking bowling, i.e. trying to bowl out the opposition. OBOUND which is % of opposition runs scored through boundaries measures defensive bowling where the aim is to limit the opposition from scoring rather than bowl them out. We have a single measure of fielding FIELD which is the % of opposition wickets due to catches, stumpings and run outs. We also include dummy variables for whether a team was (i) at home, (ii) won the toss and (iii) batted first. We measure team strength by estimating win probabilities for each team based on betting odds obtained from the Odds Portal website.

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Different Strokes: Winning Strategies in Women's and Mens' Big Bash Cricket. | *Pat Massey & Vincent Hogan*

Our results show that a combination of attacking batting and bowling strategies represent an optimal winning strategy in both leagues. Cannonier et al (2015) reported that attacking batting and bowling represented a successful winning strategy in ODI and T20 international matches but found that in the T20 IPL a combination of attacking batting and defensive bowling was represented an optimal winning strategy. As a robustness check we analysed differences between winning and losing teams in BBL and WBBL following a similar approach to Ortega et al (2009). The results showed that BOUND and OWPO (the attacking batting and bowling measures) were significant and positive for winning teams in both leagues. FIELD was also significant and positive in this model. We also find that batting second seems to improve winning chances in WBBL but has no effect in BBL. Our results support the view that winning strategies in T20 matches differ from those in other cricket formats. Finally, while attacking batting and bowling constitute successful winning strategies in both leagues, there is some evidence that scoring rates are higher in BBL. Since 2019/20 the WBBL has been played earlier in the year when batting conditions are arguably not as good. There has been a very sharp increase in rain affected matches in WBBL since the re-scheduling suggesting that this change has resulted in WBBL matches being scheduled when playing conditions are less favourable.

3: PERFORMANCE 1 | WW8: 17.00

The Impact of High Temperatures on Performance in Work-related Activities; the Case of Professional Tennis | *Jan Van Ours & Matteo Picchio*

Human beings have a thermal comfort zone with temperatures between 18 and 22°C. Outside this comfort zone, in particular with higher temperatures, there may be a negative effect on work-related activities. Outdoors, it is much easier for people to shield against low temperatures than it is to accommodate to high temperatures. People can protect themselves against low temperatures through their cloths. People find it more difficult to protect against high temperatures other than through reducing their level of activity. Indoors, climate control is important for maintaining a level of productivity. However, not all jobs can benefit from climate control. Some workers are inevitably confronted with high temperatures and other unpleasant weather conditions. From an economics point of view, the question is what the effects are of high temperatures on labor productivity. We investigate how temperature affects performance of male professional tennis players. For every point in a tennis match, players have two opportunities to initiate play by serving a ball into the correct service box at the other side of the net. A successful first serve occurs if the ball does not hit the net and lands in the service court on the other side of the net. A fault is counted for if the ball does not land in the service court of the opponent. If the server makes two consecutive faults, it is known as a double fault and the server loses the point. We use successful first serves and double faults as our performance indicators. Both are stand-alone indicators, i.e. they originate from decisions and behaviors of the player who serves, without the other player being directly involved. The contribution of our paper to the existing literature on temperature and labor productivity is threefold. First, we investigate how high temperatures affect the performance of tennis players during matches. Although two players are involved in each match, we can still measure how the individual effort of each player is affected by high temperatures. Both first serve rates and double fault rates should not be influenced by how the opponent responds to high temperatures. Second, we investigate whether the effect of temperature on productivity depends on the importance of a match. Matches are played as part of tournaments with high prizes for players who win a tournament or end up high in the final ranking. Because we know the importance of a match in terms of expected monetary value of a win we can investigate whether for matches with high stakes the relationship between temperature and productivity is different. Third, our data allow us to study the heterogeneity in the relationship between temperature and productivity in terms of player characteristics (age, quality) and working environment (different surfaces: clay, hard court or grass).

Performance in a tennis match is a function of effort, temperature and characteristics of the match: the economic rewards of winning the match, the quality of the opponent, and so on. Temperature may affect performance of a player directly and through the effect on effort. The direct effect of high temperature on tennis performance is not just because of how heat affects physical performance. There is also an effect through the psychology of playing top tennis. The indirect effect through effort is straightforward. To avoid body overheating, players reduce effort when outside temperature goes up. With high temperatures fatigue may play an important role as well. Fatigue may affect the behavior of players through its influence on physical and mental performance. In practice, it is not possible to disentangle performance of a player distinguishing ability from effort because it is difficult to measure ability and impossible to directly measure effort. We gathered meteorological data from Copernicus Climate Change Service, the European Union funded Earth Observation Program. We retrieved the daily temperatures registered at 3 pm two meters above the surface, as an approximation of the temperatures experienced both in early and late matches of the tournament day. We matched the temperature dataset with male tennis singles matches gathered from two sources. From Tennis-Data.co.uk, we retrieved match results of the ATP seasons from 2003 until 2021. In those years the information on the day in which each match was played is available, as well as other information at match level, like: location; tournament series (e.g. Grand Slam, ATP 1000, etc.); surface; if the match was played indoor or outdoor; match round (e.g. final, semifinal, etc.); if the match was best of 3 or 5 sets; winner's and loser's name; set and game scores; players' ATP rankings and points before the start of the tournament; if the match was not completed and, if not completed, if it was due to the retirement of one of the two players. After dropping matches that were cancelled or for which some of the variables which we used in the regression analysis were missing, or which lied in the first or last percentile of the temperature distribution, we have 39,546 singles matches played outdoor. From the descriptive statistics it is clear that both the successful first serve rate and the double fault rate are best in the temperature range between 14 and 20 degrees Celsius.

3: PERFORMANCE 1 | WW8: 17.00

The Impact of High Temperatures on Performance in Work-related Activities; the Case of Professional Tennis | *Jan Van Ours & Matteo Picchio*

Our identification strategy relating temperature to performance relies on the plausible exogeneity of short-term daily temperature variations in a given tournament from the average temperature over the same tournament. In its most general form, we specify tennis performance as a function of a set of explanatory variables including temperature and player fixed effects. Since the relationship between temperature and tennis performance is close to being linear we base our baseline estimated on linear specification of the temperature effects. Hence, we report estimation results for the linear specification of the temperature function. A temperature rise of 1°C decreases the first serve made rate by 0.1 percentage points. Similarly, the double fault rate is increased by 0.04 percentage points for each rise in temperature of 1°C. We investigate the heterogeneity of the temperature effects but found that these effects are generally present across the board with the age of the player as the main exception. The magnitude of the temperature effect is age-specific. Older players suffer more from high temperatures than younger players do. When it comes to using sports data a natural question concerns external validity, i.e., in our case to what extent do our main findings on professional tennis have external validity to regular work-related activities. Playing professional tennis requires a combination of intense physical activity and mental focus. The intense physical activity will rarely be met in regular work-related activities but the tennis player will most likely be much more physically fit than an average worker. Therefore, the relative input in physical activities may well be comparable to workers in regular jobs. Mental focus is required also in regular work-related activities to ensure a high labor productivity. We think that professional tennis play is comparable to regular work-related activities that requires physical input and mental focus in an environment in which climate control activities are absent.

Performance in a tennis match is a function of effort, temperature and characteristics of the match: the economic rewards of winning the match, the quality of the opponent, and so on. Temperature may affect performance of a player directly and through the effect on effort. The direct effect of high temperature on tennis performance is not just because of how heat affects physical performance. There is also an effect through the psychology of playing top tennis. The indirect effect through effort is straightforward. To avoid body overheating, players reduce effort when outside temperature goes up. With high temperatures fatigue may play an important role as well. Fatigue may affect the behavior of players through its influence on physical and mental performance. In practice, it is not possible to disentangle performance of a player distinguishing ability from effort because it is difficult to measure ability and impossible to directly measure effort. We gathered meteorological data from Copernicus Climate Change Service, the European Union funded Earth Observation Program. We retrieved the daily temperatures registered at 3 pm two meters above the surface, as an approximation of the temperatures experienced both in early and late matches of the tournament day. We matched the temperature dataset with male tennis singles matches gathered from two sources. From Tennis-Data.co.uk, we retrieved match results of the ATP seasons from 2003 until 2021. In those years the information on the day in which each match was played is available, as well as other information at match level, like: location; tournament series (e.g. Grand Slam, ATP 1000, etc.); surface; if the match was played indoor or outdoor; match round (e.g. final, semifinal, etc.); if the match was best of 3 or 5 sets; winner's and loser's name; set and game scores; players' ATP rankings and points before the start of the tournament; if the match was not completed and, if not completed, if it was due to the retirement of one of the two players. After dropping matches that were cancelled or for which some of the variables which we used in the regression analysis were missing, or which lied in the first or last percentile of the temperature distribution, we have 39,546 singles matches played outdoor. From the descriptive statistics it is clear that both the successful first serve rate and the double fault rate are best in the temperature range between 14 and 20 degrees Celsius.

4: MANAGEMENT & OWNERSHIP | WW9: 16.00

Luck and Managerial Dismissals – The Influence of Opponent Player Injuries on Coach Retention in European Football | ***Fabienne Jedelhauser, Raphael Flepp, Pascal Flurin Meier & Egon Franck***

After each match day, European football club boards decide whether to keep or dismiss the team's head coach. This crucial decision is particularly challenging because the ability of the coach cannot be directly observed. Instead, club boards must rely on observable performance measures like match results and league table rankings that reflect the coach's ability to a certain extent. However, these performance measures are frequently distorted by exogenous factors such as good or bad luck. Even though prior research has shown that past team performance measures and performance expectations (Bryson et al., 2021; d'Addona & Kind, 2014; Pieper et al., 2014; van Ours & van Tuijl, 2016) are important determinants of coach dismissals, it remains currently unknown how exogenous components in team performance affect coach dismissals. According to the informativeness principle (Holmström, 1979), club boards should ignore the exogenous team performance components in their coach dismissal decisions because these factors are not under the coach's control and thus are uninformative about the coach's ability. However, club boards may misattribute exogenous factors to the ability of the coach or succumb to the pressure of misinformed stakeholders. In this paper, we analyze whether exogenous factors influence a club board's decision to dismiss or retain the head coach. In particular, we employ opponent player injuries as exogenous performance boosts. Building upon the finding that injury-related absences of key players decrease team performance of the focal team (Jedelhauser et al., 2022), we argue that injury-related absences of key opponent team players increase the winning chances of the focal team. Notably, while injury-related absences of key focal team players may not be uninformative regarding the coach's ability, e.g., due to excessive training intensity, injury-related absences of key opponent team players represent a source of exogenous "good luck" for the focal team and coach.

Focusing on the top five European leagues (i.e., Premier League, La Liga, Serie A, Ligue 1, and 1. Bundesliga) between the 2016/2017 and 2020/2021 seasons, we collect various information on players, coaches, and teams. In particular, we derive team compositions, injuries, game lineups, corresponding coaches, and coach tenure from www.transfermarkt.com and complement this data with information on team performance and betting odds from www.football-data-co.uk. The primary dataset covers 18,058 team performance observations from 9,029 games. In line with Pieper et al. (2014) and Flepp and Franck (2021), we define within-season coach changes as dismissals if the associated press articles clearly suggest that the turnover was involuntary. Following van Ours and van Tuijl (2016),we ignore dismissals in the first four games. Further, building upon Besters et al. (2016) and Flepp and Franck (2021), we only consider the first within-season coach dismissal. Overall, we identify 149 coach dismissals, and the dependent variable captures whether a coach was dismissed or retained after a game. To identify key opponent players, we rely on the proportion of games that players have been selected to the starting lineups within a season. Coaches, at least in basketball, typically aim to start with their strongest players at each position to increase the probability winning the game (Lefgren et al., 2015). Selection to starting lineups thus captures the relative importance of teams' players. Specifically, we define key opponent players as those who have appeared in at least 90% of all possible games in a season, accounting for missed games due to injury and players' in-season changes within the top five leagues. We then combine injury information with starting lineup information to capture how many key opponent players were injured when facing the focal team.

As the number of injured key opponent players is exogenous to the focal team but is expected to affect the performance of the focal team positively, injured key opponent players form the basis of our exogenous performance measure. In particular, we sum up the number of injured key players from all opponents the focal team faced during a particular season to derive the cumulative number of key opponent player injuries before the focal match. For example, if Liverpool's opponent in round one had two key players injured and the opponent in round two had three key players injured, the variable would have a value of five in Liverpool's third game. Our baseline OLS regression analysis only includes the lag of the cumulative number of key opponent players' injuries. Although our "good luck" measurement is exogenous, the variable naturally increases with season progress. Similarly, the coach's tenure increases as the season progresses. Thus, the second specification includes the number of games played within a season and a coach's tenure in days. In the third specification, we include team and season fixed effects to control for unobserved but time-constant differences across teams and seasons. Finally, to account for performance expectations, we also control for the cumulative surprise (van Ours & van Tuijl, 2016) in a fourth specification.

4: MANAGEMENT & OWNERSHIP | WW9: 16.00

Luck and Managerial Dismissals – The Influence of Opponent Player Injuries on Coach Retention in European Football | ***Fabienne Jedelhauser, Raphael Flepp & Egon Franck***

We find that coaches of teams experiencing a higher cumulative number of injured key opponent player are significantly (p-value < 0.001) less likely to be dismissed. The results also hold when we control for games played and tenure (p-value < 0.05). Moreover, including team fixed effects and season fixed effects do not change the direction or significance of the coefficient of interest. Finally, while the cumulative surprise also significantly reduces the chances of being dismissed, the effect remains negative and significant (p-value < 0.1). The findings suggest that coaches of teams that experience good luck are less likely to be dismissed. This indicates that coaches are rewarded for factors outside of their control, in this case, key opponent players' injuries. Thus, decision-makers in European football do not act in line with the informativeness principle (Holmström, 1979) and fail to ignore exogenous performance boosts in their dismissal decisions by systematically attributing good luck to good performance. While it has already been shown that boards fail to filter out exogenous factors in CEO retention decisions in the managerial context (Jenter & Kanaan, 2015), we are the first to provide such evidence in European football by identifying a novel and exogenous determinant of coach dismissals. Our results also have practical implications for decision makers and coaches in European football. If head coaches matter to team performance, the non-replacement of a lucky coach may lead to worse performance than when a more skilled coach would have been hired. Moreover, if good luck is misinterpreted as good performance, lucky coaches may have better chances and salary offers in the job market than coaches with relatively bad luck, although the latter may be more skilled.

4: MANAGEMENT & OWNERSHIP | WW9: 16.30

The Influence of PROFUT Regulation on Brazilian Football Clubs Earnings Quality | Jose *Alonso Borba* & *Giambattista Rossi*

While investing in human talent can maximize sporting performance, it can also result in negative consequences for profits (Leach & Szymanski, 2015; Szymanski & Smith, 1997). The focus on economic performance, in addition to sports performance, has created difficulties in football clubs becoming profitable (Barajas & Rodriguez, 2014; Scelles et al., 2018; Szymanski, 2017; Szymanski & Weimar, 2019). As a result, stakeholders have proposed regulations to provide disincentives for clubs that do not conduct proper management (Dimitropoulos et al., 2016; Marotz et al., 2020). The Financial Fair Play (FFP) was implemented in Europe to bring discipline and rationality to European football club finances (Peeters & Szymanski, 2014). The regulation requires clubs to address issues such as minimizing losses and reducing debt (Dimitropoulos et al., 2016; Dimitropoulos & Koronios, 2018). In Brazil, the implementation of PROFUT, through Law n. 13,155/15, aimed to establish principles and practices of fiscal and financial responsibility and transparent management for professional football entities. Some accounting information aspects are inspired by the FFP regulation, such as the spending limit on players' salaries. Most of the biggest clubs adhered to such regulation, as it made it possible to renegotiate tax debts, extend deadlines, and reduce fines and interest. Most Brazilian and European football clubs face working capital, cash flow, and profitability challenges and are considered insolvent (Minatto & Borba, 2021; Scelles et al., 2018; Szymanski, 2017; Szymanski & Weimar, 2019). Due to systematic overinvestment, many European clubs are kept afloat by cash injections from wealthy benefactors, making them technically insolvent (Franck, 2013; Gallagher & Quinn, 2020). As a result, in this industry, club management often prioritizes meeting financial criteria set by regulators over producing reliable financial reporting information, leading to the potential disregard of their duty (Dimitropoulos et al., 2016). Therefore, this research aims to analyze the impact of regulations on conditional conservatism and accruals earnings management in Brazilian football clubs. We use the accruals earnings management model proposed by Dechow et al. (1995) and adapted by Dimitropoulos et al. (2016), as well as conditional conservatism by Ball and Shivakumar (2006). Ghio et al. (2019) explain that restrictions on expenditure could impact football clubs' trade-off between sporting and economic results, as they could modify how the clubs behave to achieve high-level sporting performance. FFP and PROFUT impose spending limits on athletes' salaries and financial indicators related to losses and debts, which have been shown to impact earnings quality (Dimitropoulos et al., 2016; Dimitropoulos & Koronios, 2018). PROFUT have also impacted Brazilian football clubs regarding their disclosure (Lemos Umbelino et al., 2019), debt (Ferreira et al., 2023) and investments (Marotz et al., 2020). Therefore, there is evidence of the exogenous shock of these regulations on clubs influenced by them. We aim to contribute to the literature by presenting evidence from the Brazilian context, an emerging market affected by financial regulation in football. Furthermore, we aim to compare the effectiveness and impact of these regulations on earnings quality with those of the most important European football markets.

The study population comprises Brazilian and football clubs. Only the clubs that joined PROFUT and remained under its regulation yearly are analyzed. For Brazilian clubs, joining PROFUT is considered a restriction. Such regulation was implemented from 2015, and the study period covers 2011 to 2021. This study employs the Dechow et al. (1995) model to estimate discretionary accruals. A regression is estimated for each year and sector using the Jones (1991) model adapted by Dimitropoulos et al. (2016). The main change was substituting the fixed asset value for the intangible assets due to the patrimonial characteristic of football clubs. Based on the estimation of the model proposed by Jones (1991), the estimated coefficients are used to calculate discretionary accruals using the model by Dechow et al. (1995). From the discretionary accruals estimated using the model by Dechow et al. (1995), the econometric model is proposed, which is used to test the hypotheses. This model is based on the studies by Dimitropoulos et al. (2016) and Brooks (2012). The pre- and post-regulation period is used as the primary variable of the model. The period between the years 2011 and 2014 is used as the pre and post-periods comprising the years between 2015 and 2021.

The implementation of PROFUT in 2015 had a regulatory effect, leading to a decrease in discretionary accruals and an increase in profitability and operating cash flow generation. This indicates that football clubs have improved their economic performance and engaged in fewer earnings management practices.

4: MANAGEMENT & OWNERSHIP | WW9: 17.00

Do Football Owners Matter? The Case of Premier League | ***Luis Carlos Sanchez, Angel Barajas & Patricio Sanchez-Fernandez***

Ownership of firms is one of the most studied features due to its influence on management. The influence of ownership in the performance of the firms presents important differences by geographical areas or industries. Several studies have found an influence of ownership on football clubs' performance. Acero et al. (2017) and Sanchez et al. (2020) found that clubs with dispersed ownership obtained better financial performance. Dispersed ownership was also related to more efficient use of club resources for sports and economic aims Sanchez et al. (2017), more transparent management (Hamil et al. 2004) and a pricing policy more beneficial to fans (2020). Regarding foreign ownership, Rohde and Breuer (2016) found that clubs obtained worse profitability and Wilson et al. (2013) found a negative influence on sports performance. When authors such as Sloane (1971), Fort (2000) or (Morrow, 2003) pointed out that the objectives of European football clubs were different from those of the American sports clubs, ownership was homogenous in each continent. However, Sanchez et al. (2017) showed that objectives in European football may vary between clubs because of the different types of owners. If financial and sports objectives were compatible, these differences could be not important. However, Sanchez et al. (2020) noticed that there is a trade-off between profits and sports performance, showing the importance of the objectives of owners for the interests of other stakeholders. Previously, football clubs were owned by fans and local owners. Nowadays, ownership in football has experienced significant changes with the emergence of foreign investors, especially strong in the English Premier League as Sanchez et al. (2021). Many of these investors came from the USA without no relationship with the club or the city and with experience in American sports. For this reason, we could think that the motivation for the investments in the English club would be similar to that of the NFL club. In this way, some North American leagues and European football clubs share a similar typology of owners, the objective of this paper will be to study if these takeovers have led to the pursuit of similar goals in both continents. The foregoing arguments lead to the following hypothesis: Hypothesis 1: the acquisition of clubs by American investors improves clubs' financial performance worsens clubs' sports performance. We will study how are the changes in the performance of football clubs in the case of the rest of the buyers. However, these investors are heterogenous, and their objectives can be different. For this reason, we can add: Hypothesis 2: the acquisition of clubs by non-American investors does not vary either club's financial performance or sports performance. On the other hand, if a change of owners influences the football clubs' management regardless of the nationality of investors, it would have an improvement in the clubs' performance when we studied overall clubs with new owners. This leads us to the next hypothesis: Hypothesis 3: Clubs with new owners improve.

The sample includes those clubs with at least three seasons in the Premier League in the period studied since the emergence of international investors in English football in 2005 until nowadays. The performance studied will include sports and financial management. The comparison is between the five previous seasons of the purchase and the five seasons after. For this reason, new owners must remain for at least five years for their clubs to be included. It is also necessary that the club remain in the Premier a minimum of three seasons to avoid the difficulties of comparing performances in different tiers. Sport performance will be measured by results in the domestic league, comparing the points obtained. Thus, all clubs can be compared because not all clubs compete in continental competitions. Financial performance will be measured with ratios about the evolution of profitability and indebtedness. These ratios include Return on Assets, Profit to Sales, Sales to Assets, Leverage, and Working Capital to Assets. In this way, the management of the football clubs will be studied with a broader focus. In the first analysis, we will compare the performance before and after the change of owners to estimate the influence of the change in the performance of football clubs. Thus, we will analyse the consequences of new owners in the management of football clubs. Secondly, we will compare the evolution of clubs under treatment to the group of control. This analysis will be made with each of the groups studied, American investors, non-American investors and all of them, with the objective to answer the hypothesis raised. They will be the group under treatment in each analysis. The control group will consist of the clubs where ownership remained unchanged.

While the following work is research in progress, we have limited results at the moment. Preliminary results show that clubs purchased by an American investor worsened both performances, sports results and profitability, after the takeover. This would lead to accepting the second hypothesis that sporting success would not be a main aim for American investors. However, clubs bought by Americans shows also worse profitability. It will be necessary to test the rest of the ratios to obtain conclusions about the financial performance of these clubs. Moreover, an analysis of the other groups to study (clubs purchased by non-Americans and the set of all clubs that change owners) will be necessary before obtaining conclusions.

Time	Day 2 | Thursday, 24 August 2023 | 9.00 – 11.00			
	5: OFFICIATING & RULES | WW5 **Chair: *John Considine***	**6: EVENTS | WW6** **Chair: *Seppo Suominen***	**7: DESIGN | WW8** **Chair: *Alex Krumer***	**8: COMPETITION | WW9** **Chair: *Dennis Coates***
9.00	Referee Bias: Actual vs Expected Additional Time | ***Alperen Koscoy***	Willingness to Pay for Hosting the Formula One in Copenhagen: How Important is Consequentiality? | ***Christian Gjersing Nielsen*** & ***Arne Feddersen***	Round-Robin Tournaments with Two and Three Games per Team: Evidence from Beach Volleyball. | ***Alessandro Di Mattia*** & ***Alex Krumer***	Advancing the Measurement of Competitive Intensity: An Examination of the German Bundesliga | ***Adam McCarthy***
9.30	Compensating Tendencies in Free-Shot Awards: The Case of Hurling | ***John Eakins***, ***John Considine***, ***Peter Horgan*** & ***Conor Weir***	Effects of Medium-sized Sport Events on Hotel Sector in Finland, a Differences-in-Differences Approach | ***Seppo Suominen***	What We Can Learn from the Difference Between League and Cup Football matches? | ***Martin Van Tuijl*** & ***Jan Van Ours***	Competition in the Provision of Recreational Services: For-Profit and Non-Profit Equestrian Providers | ***Dennis Coates***, ***Svenja Feiler***, ***Pamela Wicker*** & ***Christoph Breuer***
10.00	Effects of the Rule Change from Three to Five Substitutions in the Bundesliga ***Lars Vischer*** & ***Alexander Dilger***	Analysing Host Effect with Synthetic Control Method: A new approach | ***Gergely Csurilla*** & ***Imre Fertő***	Format and Schedule Proposals for a FIFA World Cup with 12 Four-Team Groups | ***Mario Guajardo*** & ***Alex Krumer***	Public Interest Considerations in European Sports Competition Policy: The Case of UEFA I ***Oliver Budzinski*** & ***Arne Feddersen***
10.30	Home advantage in professional surfing: Are local surfers better? And local judges more challenging? | ***Juergen Roesch*** & ***Darius Naumann***	Are Olympic Winter Games Perceived as too Large and Expensive? Evidence on the Attitudes of German Residents | ***Markus Kurscheidt***, ***Kristoff Reichel*** & ***Christian Brandt***	National League Design and the International Competitiveness of Football Clubs | ***Szczepan Kościółek***	Localization Economies and Firm Productivity: Evidence from Football Teams in Sao Paulo, Brazil | ***Brad Humphreys*** & ***Amir Ferreira Neto***

5: OFFICIATING & RULES| WW5: 9.00

Referee Bias: Actual vs Expected Additional Time | *Alperen Koscoy*

Several studies exploited the games played behind closed doors during the Covid-19 pandemic to test the effect of social pressure on referee decisions (see, Bryson, Dolton, Reade, Schreyer, & Singleton, 2021; Endrich & Gesche, 2020; Reade, Schreyer, & Singleton, 2022; Scoppa, 2021) and find referees decide in favour of home teams when the fans are present only. Therefore, referees tend to decide impartially during Covid-19. Recently, Studies find no such bias in favour of home teams when fans are absent due to the Covid-19 pandemic or other safety reasons, including stadium bans (Pettersson-Lidbom & Priks, 2010; Reade et al., 2022; Endrich & Gesche, 2020). As home teams have the majority of the fans in stadiums; they may cause a home bias in referee decisions through social pressure. However, such studies neglect that fans' pressure may have an effect on players, like on referees. Farnell (2023) analyses discretionary penalties in the NFL and finds home teams commit fewer defensive penalties when fans are present. Similarly, Ferraresi and Gucciardi (2021) examine the home advantage in penalty kicks and find that the missing probability of home teams is lower while that of away teams is higher when fans are present. These findings show that fans affect the players, even for penalties. Therefore, neglecting any potential effects of fan pressure on players while examining referee bias in the number of cards, penalties, and fouls may cause misleading findings. In this paper, I examine referee behaviour in additional time by introducing a new variable, ball-in-play time, which may eradicate possible omitted variable bias in the referee bias literature. Previous studies examining referee bias by using additional time control the number of red/yellow cards, substitutions and injuries for time lost during a game. However, there might be other causes for time lost (i.e., the winning team could cool the game down even when there is a goal kick, corner, or throw-in). Moreover, Siegle and Lames (2012) show that time spent for affairs like red cards or substitutions may differ from winning team to losing team and depend on the time and location of the affair (i.e. goalkeeper injuries may take more time as their treatments are done on the pitch while other players are taken out of the pitch for treatment(IFAB, 2022)). Instead of trying to control such things gradually, I propose a new variable, ball-in-play time, which is the exact duration the game is played and captures every game stops. I calculate the expected additional time for each game by using ball-in-play data. The difference between the actual additional time, which is added by referees, and the expected additional time is considered as bias. By borrowing and developing the empirical strategy of Garicano et al. (2005), I inspect how this difference has been affected by the winner at the end of the 90th minute by one goal and by the presence of home fans.

I use the OLS regression equation below to estimate the effect of social pressure on referee decisions, where the dependent variable is the difference between actual and expected additional time in the game between home team. The independent variables are ScoreDifference, and Covid is a dummy variable 1 if the game is played during the Covid and behind closed doors. Their interaction, ScoreDifference× Covid, is the main interest of the study and tests if the presence of fans affects referees' decisions by putting pressure on them.

Referees keep the game 19 seconds shorter when home teams are leading. The interaction term captures the effect of home fans on referee behaviour in additional times in football and proves that referee bias stems from fans' pressure. Additionally, I provide separate estimates of the referee bias before, during and after the Covid-19 pandemic to check if removing fans helped the referees to develop cognitive solutions against fan pressure as it might be claimed by the nudge theory. During Covid-19, when matches took place without fans, referees added time impartially, and there was not any statistically significant difference between actual and expected additional time. However, the additional time was approximately 25 and 22 seconds shorter while home teams were leading by one goal, before and after the Covid-19 pandemic, respectively. Therefore, referees only marginally improved their impartiality after Covid-19, which shows the limited effect of the nudge theory.

5: OFFICIATING & RULES| WW5: 9.30

Compensating Tendencies in Free-Shot Awards: The Case of Hurling | *John Eakins, John Considine, Peter Horgan & Conor Weir*

In recent years, there has been a significant increase in the collection and analysis of sports data. The analysis of performance data is now almost commonplace among competitors, competition organisers, sports governing bodies, broadcasters, media commentators, and academic researchers. While the primary focus of much of this research is on the performance of the competitors, some of the same data facilitates an analysis of the performance of the officials in charge of the game. There is a large strand of research literature that examines the relationship between disciplinary sanctions and non-rule factors (Bose et al., 2022; Dohmen & Sauermann, 2016; Price et al., 2012). As these non-rule factors should not be determining disciplinary sanctions, evidence of a statistical relationship is viewed as a bias in human decision making. Within this strand of literature there is evidence that officials display compensating tendencies during sporting contests. There is evidence that officials adjudicate in favour of the individuals or teams behind on the scoreboard (Noecker & Roback, 2012; Moskowitz & Wertheim, 2011). There is also evidence that officials compensate for their own previous calls (Anderson & Pierce, 2009; Chen et al., 2016; Schwarz, 2011). The primary purpose of this paper is to add to this compensating tendency literature using data from hurling, the national sport in Ireland. This paper examines the relationship between the awarding of free shot at a given point in the game and the difference in cumulative scores, free shots, and disciplinary cards to that point. This research question is explored using a unique data set that is constructed based on 75 games across three seasons, 2016-2018, of the All-Ireland Senior Hurling Championship. Given that scores from these free shots in hurling account for approximately 30% of total scores, any bias in awarding free shots can have a significant impact on the dynamics and outcome of games. This data set also allows us to contribute to the literature on between game explanations of disciplinary outcomes. First, it allows us to cast a different light on the issue of home bias in explaining disciplinary outcomes. This is possible because 48% of the games in our data set are played at neutral venues. Thus, a comparison of non-rule explanations of free shot awards between neutral and non-neutral venues can be carried out. Second, as the data set also information on attendances which have a large variation, it allows us to cast a different light on the mass psychology explanation, postulated to cause these compensating tendencies. Third, it allows us to test if there is a bias towards stronger teams, given that our data set also has a variable which measures the relative strength of the hurling teams.

This study examines evidence of compensating tendencies within the game of hurling, the national sport in Ireland. The data that is used in the analysis is based on games played in the All-Ireland Senior Hurling Championship across three seasons, 2016-2018. A total of 75 games were played in these three seasons. The data was collected by viewing the recorded footage of each game from RTE Google Drive. In addition to when a free is awarded to either team, the other in-game information that was collected, includes the time of free awarded, the score differential (i.e., the margin) between the two teams when the free was awarded, when a yellow or red card is awarded to either team and the time a yellow or red card was awarded. To test for compensating tendencies, the methods used by Anderson and Pierce (2009) and Noecker and Roback (2012) are adapted. They estimated logit models relating the probability of a team being awarded a foul to a set of independent variables including the score differential and foul differential at the time the free is awarded. They classify the two teams as home team and away team. As some games in our data set are played at neutral venues, this classification needs to change. In our study, the team with the better Elo rating is defined as Team A and the other team as Team B. The margin is then defined as Team A score minus Team B score at the time a free shot is awarded. Our data set also contains attendance data with a large amount of variation in the figures per game, which can enable an investigation into the possibility that the size of the crowd, or volume of noise, might influence decisions. The effect of a partisan influence of crowds is also examined by looking at whether differences exist between neutral and nonneutral venues. The influence of home support on referees' decisions is well documented as already outlined in the literature section (Garicano et al., 2005; Van de Ven, 2011; Ponzo & Scoppa, 2018; Daumann et al., 2022; Reade et al., 2022). The effect of large attendances and partisan home crowds are examined by adding interaction variables to our models. In summary, a number of probit models are estimated to examine whether the awarding of a free shot to one team is determined by the margin, net free count and net card count at the time. In addition, the effect of large attendances and home games on these compensating tendencies are captured using interaction effects.

5: OFFICIATING & RULES| WW5: 9.30

Compensating Tendencies in Free-Shot Awards: The Case of Hurling | *John Eakins, John Considine, Peter Horgan & Conor Weir*

Our results show that the probability of a team being awarded a free shot in hurling increases if the team is behind on the scoreboard and behind in the free count. There is no evidence to suggest that the yellow or red card count has an effect on the probability of a team being awarded a free shot. These compensating tendencies might help explain why approximately one-third of games are decided by one score or less. The effects are consistent across different model specifications. They are also consistent in terms of sign and significance if the team being examined is the stronger team or the weaker team. There is however some evidence that the compensating tendency to award frees is statistically greater for stronger teams especially when they are behind on the scoreboard by a large margin. When the game is played in front of large attendances the probability of a team being awarded a free shot if the team is behind on the scoreboard increases suggesting a crowd effect reinforces this compensating tendency. In contrast, there are no observable differences in compensating tendencies when games are played at neutral or non-neutral venues. Interestingly, we also find that no evidence of a home team bias in compensating tendencies when examining the subset of games that are played at non-neutral venues. This would suggest that the home bias effect may be a multifaceted phenomenon, its existence depending on the type of decisions or outcomes that are examined. Our findings are more consistent with recent literature showing that the on-field referee may not be the primary source of home advantage in disciplinary outcomes (Dawson et al., 2020; Holder et al., 2021).

While we would agree with potential changes that might help reduce this bias, we would suggest that the biases are in the correct direction provided they don't undermine the perception of the fairness. Using the Rawlsian philosophical concept of a "veil of ignorance" one could argue that competitors, who are ignorant of the position that they are likely to find themselves in, would support giving the benefit of the doubt to the competitor that is behind in the competition at that point in time. Using the competition (antitrust) law concept of minimising the cost of errors it is also possible to argue that compensating tendencies operate in the correct direction. On balance the cost of an error to the team behind on the score is larger than cost to the team ahead on the scoreboard. Therefore, the benefit of the doubt should go to the team behind in the count. An acceptance of the position that the benefit of the doubt should go to the competitors behind in the count, combined with our finding, might make the job of officials more rewarding. This is crucial to maintaining the delivery of competitions (Giel and Breuer, 2021). Our finding show that the benefit of the doubt is not partisan and, at the same time, errs in favour of keeping the contest competitive

5: OFFICIATING & RULES| WW5: 10.00

Effects of the Rule Change from Three to Five Substitutions in the Bundesliga | *Lars Vischer & Alexander Dilger*

The COVID-19 pandemic has led to massive restrictions and changes in many different areas of life, including professional sports. In football, many games had been cancelled and then five instead of three substitutions were allowed in the unchanged maximum of three time-outs. This initially temporary, but now permanent rule change affects the possibilities and thus the decisions of the coaches of the teams. We analyzed 530 games with three possible substitutions and 388 games with five possible substitutions in the 2018/2019, 2019/2020 and 2020/2021 seasons of the Bundesliga (first division of German men's football). All important game events such as penalties, goals and substitutions were collected. Preliminary results show that the number of substitutions has a significant impact on match results and that the number of substitutions per team has increased with the rule change, while the full substitution quota is used less than before. Time windows for substitutions do not seem to change.

Preliminary results show that the number of substitutions has a significant impact on match results and that the number of substitutions per team has increased with the rule change, while the full substitution quota is used less than before. Time windows for substitutions do not seem to change.

5: OFFICIATING & RULES| WW5: 10.30

Home advantage in professional surfing: Are local surfers better? And local judges more challenging? | *Juergen Roesch & Darius Naumann*

Home advantage is a decisive factor in many team sports, especially professional football. In individual sports, it is less clear if performing at home is an advantage, as home advantage has been less studied. This paper contributes to the literature by applying team sports findings to professional surfing. Professional surfing offers several interesting features for investigating the home advantage. First, conditions in the surf sport differ depending on, for example, currents or wave shape. Second, five judges score each wave independently. Hence, there is no objective measure of success, like goals or points. Third, the world tour takes place in different locations worldwide; in some locations, many judges from the home country are part of the judging team, and in other countries, no domestic judges are involved. And fourth, there is no stadium-like atmosphere even though fans can watch the event on the beach and online via live stream with professional commentators. The literature on home advantage typically suggests six explanations: crowd effects, travel effects, familiarity, referee bias, territoriality, and general psychological factors. Applying those factors to professional surfing, the expectations about the size and direction of potential home advantage are ambiguous. As crowd effects are perceived to play a major role in team sports, they are presumably less influential in surfing since competitions take place at beaches. On the other hand, territoriality plays a more significant role as local surfers tend to protect “their spot” from non-domestic surfers. Home surfers may also have larger incentives to perform in the presence of local fan communities. However, territoriality can be understood as a psychological factor rather than a tangible advantage, as it depends on the surfer’s character and sense of competitiveness. Familiarity may be one of the biggest levers to enforce a competitive advantage for domestic surfers. Unlike national football leagues, where pitch sizes are standardized, and matches are played at similar times and in similar climates, local conditions are much more important for surfing events. Surf spots across the globe are unique and highly dynamic; familiarity with the general conditions may enhance individual performance. Further on, travel effects could be larger as the professional surf tour takes place in different spots worldwide. Longer travel distances can impact travel fatigue and acclimatization with local conditions. The subjective evaluation of each wave by five independent judges might be another source of home advantage for surfers. Knowing both their nationality and the assessment of each of those five judges allows us to investigate what is called referee bias in the team sports literature. For judges, the same factors as for surfers may apply. Especially familiarity and travel distance can influence judges the same as surfers. However, the competition is designed to balance the influence of a single judge by taking the average of the five-judge scores. Hence, we should not expect to find any impact on the final score.

To test for a potential home advantage, we gathered a dataset with 24,686 surfed waves by 135 surfers in 37 events held in eleven countries from 2017 to 2022, with a Covid-19 break in 2020. For each wave, we can also observe the score given by each judge and the judge's nationality, which is necessary for calculating a home or nationality bias within judge scores. To control for the quality of the surfer, we complemented the dataset with information about the surfer's sponsor. Besides, we created a variable that controls for past performance of the surfer and included fan picks, where online viewers can pick their favorite surfer in each heat as a proxy for which surfer the crowd favors. We further control for weather conditions, the day during the tournament, the tournament structure (round, heat), and whether the surfer is qualified for the whole season or is participating with a wildcard. To test for home advantage for surfers, we run regressions on each wave surfed, including a dummy determining whether the surfer is from the country where the event takes place and the above-mentioned independent variables. Then, we run the same regression for only the two best waves per heat per surfer, determining whether the surfer wins the heat. Knowing the heat winner also allows us to use a logit model to test if a home surfer is more likely to win a heat. And finally, we can observe in which round each surfer left the tournament, which allows for an ordered-probit model to test whether home surfers proceed further in events in their home country. In each model, we cluster error terms to account for unobserved heterogeneity based on the respective aggregation level of the dataset. As we can also observe each judgment and the judge’s nationality, we can disentangle the effect of a surfer performing at home and a judge evaluating waves in his home country. This allows us to gather insights into how this particular competition design influences a potential home advantage. Again, we use an OLS regression with similar control variables to test whether a domestic judge makes different decisions from other judges. To further investigate the home advantage in professional surfing, we use the fact that the constellation of judges changes during events. This opens the opportunity to explore the effect of home surfers, home judges, and the combination of both. In some events, we can observe heats with home judges and a home surfer; others without a home judge. Here, we can compare how home surfers perform in heats with the involvement of a home judge and without surfers from other countries performing before and after the change.

5: OFFICIATING & RULES| WW5: 10.30

Home advantage in professional surfing: Are local surfers better? And local judges more challenging? | *Juergen Roesch & Darius Naumann*

We cannot find a general home advantage when analyzing the performance of the surfers. This is true when we look at each wave surfed and scored and test for potential home advantage in the top two waves per heat that will determine which surfer wins the heat. Furthermore, we cannot find a significantly higher or lower probability of home surfers winning a heat. Also, we cannot find a significant impact of the home surfer dummy variable on the round when the surfer exists in the respective event throughout the whole period. This changes, however, if we separate the dataset before and after Covid. Here we find a significant negative impact of the home surfer dummy on the base of each wave before the Covid-break but a more differentiated result after the Covid-period. Here, the home surfer dummy has no direct influence, but the combination of the home surfer and home judge is positive and significant. This also translates into a significantly higher score for the two best waves after Covid for home surfers. And a higher likelihood of winning a heat when there is a combination of a home surfer and at least one home judge. However, this is currently still under investigation. Home judges seem to perform significantly differently from non-domestic judges. We find that home judges, on average, give significantly lower scores than their foreign counterparts. This also holds when we only look at the two waves that decide on the total score of a heat. An explanation for this is that the judges know the territory and what is possible under which conditions and are, therefore, more critical of the performance of surfers (in general, not just home surfers). Looking at the events where the constellation of judges changed from including a home judge to no home judge, again, home judges give significantly lower scores. The results are still preliminary, and the last events from 2022 still need to be added to the dataset due to data availability. Moreover, data on female surfers further allows us to investigate a possible gender bias in home advantage. Further investigation into relatively close heats or knockout rounds can also give additional insights (we already control for the round during the event). In sum, the results so far indicate that the potential disbalance of the competition due to a home advantage might not be severe. However, the changes in the event structure, especially during 2021, might influence the home advantage. Even though this does not raise big concerns from a competition design perspective, it still gives valuable insights into the research about home advantage, especially in individual sports.

6: MEGA EVENTS| WW6: 9.00

Willingness to Pay for Hosting the Formula One in Copenhagen: How Important is Consequentiality? | *Christian Gjersing Nielsen & Arne Feddersen*

In 2017, a Danish consortium of private investors presented a plan to host a Formula One Grand Prix in Copenhagen in 2020, 2021, and 2022. The plan was for the three-day Grand Prix to be held on a city track in inner Copenhagen with 107,000 temporary stands, including a festival with concerts and big screens, and fan events around the track (Josevski, 2018). According to Danish media, the idea was that private investors should cover 80% of the total costs, while 20% had to be covered with taxpayer money split between the Danish state and the municipality of Copenhagen (Hansen, 2018). In march 2018, a small majority of the Copenhagen city council voted to look into the opportunities of hosting Formula One under the condition that the municipality of Copenhagen would not have to contribute financially to host the race (Jyllands-Posten, 2018). The national government, however, made it clear that it would only subsidize the event if the municipality of Copenhagen would also be financially involved (Klarskov, 2018). As a result, in September, the Copenhagen city council withdrew its support for the project (Ryefelt, 2018). Shortly after, a petition initiative collected over 20,000 signatures supporting a Formula One Grand Prix in Copenhagen (Debel, 2018). Moreover, in 2022, the Danish Chamber of Commerce surveyed the Danish population about their attitudes toward hosting large sporting events and reported i.a., that 58% fully or somewhat agreed that Denmark should "do more" to attract them, while 54% fully or somewhat agreed that hosting them was "worth all the costs" (Danish Chamber of Commerce, 2022). Yet, as respondents were not faced with any tradeoffs it may say little about their true preferences.

To uncover the preferences of Copenhagen households expressed in their willingness to pay (WTP) for hosting a large international sporting event – Formula One – this contribution applies the contingent valuation method (CVM). In stated preference surveys, respondents make purchasing decisions in hypothetical markets for non-marketed goods (Carson, 2000). As hypothetical markets may provide different incentives than the actual marketplace (Zawojska & Czajkowski, 2017), it can result in "hypothetical bias" where respondents over- or understate their true WTP (Bateman et al., 2002). Thus, surveys should be designed so that respondents maximize their utility by answering truthfully, i.e., surveys should be incentive-compatible (Carson & Groves, 2007; Mitchell & Carson, 1989). Here, a key aspect is to design consequential surveys where respondents (1) perceive a nonzero probability of influencing the outcome of the policy and (2) believe that they have to pay the presented (or stated) amount in case the policy is adopted (Carson et al., 2014) in what is known as policy and payment consequentiality (Herriges et al., 2010). This study further adds to the stated preference literature on sporting events by testing the effect of consequentiality: (1) We randomly divide respondents into two groups and provide them with different incentive properties, and ask them to assess policy and payment consequentiality using a continuous measure (Mohr et al., 2022).

The study is designed as a cross-sectional survey to be conducted in April/May of 2023 as an online questionnaire delivered to 14,650 randomly selected citizens in the municipality of Copenhagen. The introduction letter emphasizes that the survey is about attitudes toward public projects that are subsidized with public funds and their opinion on a specific project, without mentioning Formula One to limit self-selection. Respondents are randomly divided into "consequential" and "inconsequential" groups that receive different incentive properties. After a range of attitudinal questions, questions about consumption, information about the Formula One project in Copenhagen, and the political decision process portrayed in the Danish media, respondents are told to imagine that the rights owner, Liberty Media, has decided to invite Copenhagen to host a Formula One Grand Prix in 2026, 2027, and 2028. Moreover, they are informed that the financing by the Danish state and private investors is in place and that it is now up to the municipality of Copenhagen to approve or decline hosting the race. Moreover, respondents are told to imagine that the municipality has decided that it will not cut down on other activities to host Formula One. Thus, the only way to finance the municipal share of the costs is to impose an earmarked household tax in the three hosting years. Respondents in the consequential group are informed that the tax depends on household income and asked to state their total household income, while the inconsequential group does not receive this information. The inconsequential group will instead be asked to state their household income at the end of the survey. Afterward, respondents are presented with a referendum-style scenario with one of five randomized tax payments and asked to vote for or against hosting Formula One in Copenhagen. Respondents in favor of hosting are asked a follow-up question on the certainty of their vote to (potentially) adjust for hypothetical bias (Loomis, 2011). Moreover, to identify potentially invalid bids – i.e., responses that are not based on the welfare change from hosting Formula One – all respondents are asked to select the primary reason for their vote. Additional debriefing questions are included to test the effects of policy consequentiality and payment consequentiality on WTP using a continuous measure.

6: MEGA EVENTS| WW6: 9.00

Willingness to Pay for Hosting the Formula One in Copenhagen: How Important is Consequentiality? | *Christian Gjersing Nielsen & Arne Feddersen*

As the single binary question gives limited information on the individual respondent's WTP, respondents are also faced with a payment card and asked to state how likely they would vote in favor of hosting Formula One in Copenhagen at different tax amounts (5-point Likert scale). However, as this question is not incentive compatible (Carson et al., 2014), it is placed after the debriefing questions, so the policy and payment consequentiality questions are not polluted. Further, to identify respondents "in the market" – i.e., individuals with a positive WTP for hosting Formula One –individuals stating that it is unlikely that they would vote in favor of hosting at any of the presented amounts are further asked whether they would support hosting if it was financed entirely by private investors.

As the data collection is yet to be carried out, there are no preliminary results. However, our a priori expectation is that respondents who believe that the survey results can influence policy consequentiality are more likely to vote in favor of hosting, while respondents believing that their tax will increase if Copenhagen ends up hosting (payment consequentiality) are more likely to vote against the policy, ceteris paribus. Moreover, we expect respondents in the consequential group to perceive a higher degree of policy and payment consequentiality.

6: MEGA EVENTS| WW6: 9.30

Effects of Medium-sized Sport Events on Hotel Sector in Finland, a Differences-in-Differences Approach | Seppo Suominen

Hosting a mega sport event has attracted cities and countries due to economic benefits. Mega events stimulate restaurant, hotel and transportation business of the host city. Mega events are associated with increased prices for tourism-related industries(Matheson, 2009). Therefore, government sponsor sporting events even when the actual event is making a loss (Madden, 2006). Quite often these events are associated with more short-run costs than short-run revenues (Zimbalist, 2016) .Hosting a mega sport event may be a strategy by cities to receive additional funding from the national government for local infrastructure construction (Fourie & Santana-Gallego, 2022). Developed countries have already an advanced infrastructure and the investment in infrastructure takes place most often in developing countries (Abuzayed, 2013). Cost of infrastructure investments may outweigh the positive benefits of the mega event (Wan & Song, 2019). Hosting sport events might increase participation in sports and improve the general health of the population (Mitchell & Fergusson Stewart, 2015). However, there is no empirical evidence showing increased sports participation (de Nooij & van den Berg, 2018). Still politicians favour hosting a mega sport event (like Olympics, Soccer World Cup) since they believe that there is additional consumer spending and an income multiplier effect, long-term growth of tourism, additional exports, it brings about more favourable nation and city branding, and hosting a mega event increases happiness (de Nooij & van den Berg, 2018). Mega event has been characterised by a large number or participants and huge number of television spectators. A medium-sized sport event is not attended by such many participants as mega events do and the television viewership is substantially smaller. Hotel business is relevant target since hosting an event often stipulates hotel construction in advance and during the event, the revenue increases. Consumers are more interested in travelling to the cities where sport events are organized (Pop et al., 2016). Event tourism refers to consumers willing to travel to a destination where sport events (Olympics, World Cup) are organized while sport tourism means that consumers wish to participate sport-related activities e.g., running a marathon by themselves. Since we know something about the effects of mega events on local economy but much less on the effects of medium-sized sport events, it is reasonable to study what are the effects of some sport events on the hotel sector in Finland. While room rates differ across hotels and booking time, the events should on average have an increasing effect on hotel rates and revenues. The conventional measures in hotel management are RevPAR, average daily rate (ADR) = (room revenue)/(rooms sold) and occupancy percentage (CU%) = (rooms sold)/(rooms available) or simply demand/supply. RevPAR can be computed by dividing total room revenue by the rooms supply (available rooms) in a specific time or equivalently RevPAR = CU% ·ADR.

Differences in differences - Data consists of monthly hotel sector data including RevPAR, ADR and OCCUP% from January 2011 to August 2022 with 140 observations in each city: Espoo, Helsinki and Vantaa from the Helsinki region. Tampere, Turku, Jyväskylä, Oulu and Lahti. 2012 IIHF WCHelsinki4. – 20.5.2012Hotels in Espoo and Vantaa also. 2013 IIHF WCHelsinki3. – 16.5.2013Hotels in Espoo and Vantaa also. 2015 W Gymn.Helsinki12. – 18.7.2015Schools also used for sleeping. 2018 S Gymn.Turku7. – 10.6.2018Schools also used for sleeping. 2020 RallyJyväskylä Cancelled Usually end of July/early August. 2022 IIHF WCHelsinki and Tampere13. – 29.5.2022Helsinki: 13. – 26.5.2022, Tampere 13. – 29.5.2022 Finland playing in Tampere. 2022 S Gymn.Tampere9. - 12.6.2022Schools also used for sleeping

The results indicate that any sport event had no effects on revenue per available room (RevPAR) during this sample period. However, the effects on average price (AvPri) at Tampere during the IIHF 2022 (Ice hockey) are significantly positive. All other sport events have had no significant effect on average room prices. Since the event was long enough (17 days) the effect is significant with monthly data.

6: MEGA EVENTS| WW6: 10.00

Analysing Host Effect with Synthetic Control Method: A new approach | *Gergely Csurilla & Imre Fertő*

Over the past decades, several studies have shown the economic benefits of hosting mega sporting events, in particular the Olympic Games. After a while, however, most of these studies were suspected of being biased in several respects. Recent studies now clearly demonstrate that there is no economic impact of hosting a mega-sport event (Kobierecki & Pierzgalski, 2022; Viana et al., 2018). In the absence of economic benefits, the medal surplus associated with hosting is still often claimed. In addition to the social aspects, a country's participation in the Olympics can also generate indirect economic benefits through various channels. Over the past decades, many countries have used international sporting success as a tool of soft power (Freeman, 2012). National sporting success not only makes people happier but can also influence macroeconomic outcomes through people's perceptions and expectations of current and future economic conditions (Wicker et al., 2012). In addition, there is clear evidence of a link between international football results and stock market returns (Ashton et al., 2011), which also highlights the economic importance of sporting success. The advantage of the home field is attributed to a variety of factors, some of which have been empirically proven. Costs of participation are minimised, athletes compete in facilities adapted to their needs, they are more motivated in front of a home crowd, and refereeing decisions in questionable situations are in favour of the home athlete or team. These factors, combined with the increase in government funding for sport prior to the domestic Olympics, have led previous studies to suggest that the host country typically wins 1.8 percent more medals than its previous performance (Bernard & Busse, 2004). In recent years, empirical evidence suggests that the host effect is less obvious at the Olympics (Csurilla & Fertő, 2023) than previously indicated, or at least its magnitude is certainly decreasing (Singleton et al., 2021) .In addition to the host effect, pre- and post-host effects have also been previously investigated, but evidence on these has been contradictory. In this paper, we provide evidence on whether hosting the event will indeed lead to additional medals. To demonstrate this, we use the synthetic control method. Synthetic control method has been used previously in the sport economics literature to investigate the impact of hosting the Summer Olympic Games on the future sporting success of a former host country (Barbosa et al., 2016) and to demonstrate the impact of mega-sport events on tangible economic benefits (Kobierecki & Pierzgalski, 2022; Viana et al., 2018). Our paper contributes to the existing literature in several ways. To the best of our knowledge, we are the first to use synthetic control method to measure host effect, providing evidence for the presence of an impact. We also examine not only all the medals won, but also the men's and women's medals separately. It is only in the last decade that gender differences in the Olympic Games have started to receive attention in the literature.

We used data on the number of medals won at the 1996-2021 Summer Olympics. Due to regime changes in the 1990s and previous boycotts, results from previous Olympics could only be used with caveats. Instead of aggregate data, we used medal counts at the sport level to obtain more detailed information on countries' Olympic performance. These dataset enables us to employ sports fixed effects to control for biases arising from heterogeneity within sports. This level of detailed performance data has not been used for the SCM method before. Individual units are the countries associated with each sport (e.g. Afghanistan athletics) and the time dimension is the year of the Olympic Games in the dataset. We used data for countries that have qualified athletes in the respective sport. For socio-economic indicators, data from the World Bank database were employed. The Olympic Games are a quadrennial event, therefore, in order to obtain more detailed information on the economic and social situation in each country, four-year geometric averages were calculated for the Olympic Games year and the three years preceding it. This method eliminates bias due to data volatility or erroneous data. We evaluate the causal effects of hosting the Olympic Games on the medal surplus associated with hosting operationalized in terms of the number of Olympic medals won by countries in the sports disciplines. Our estimator for operationalising the causal effect of Olympic hosting is the average treatment effect on the treated. We calculate the average treatment effectas the average difference between the number of medals observed by the treated unit and its synthetic version (the weighted average of the control units) over the intervention period - the latter result is known as the estimated counterfactual. In this paper, we specifically impute the medal count increases that would have occurred in the absence of the treatment, i.e. in the absence of the Olympic Games, for Australia (2000 - Sydney Olympics), Greece (2004 - Athens), China (2008 - Beijing), the United Kingdom (2012 - London) and Brazil (2014 - Rio de Janeiro).

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Analysing Host Effect with Synthetic Control Method: A new approach | *Gergely Csurilla & Imre Fertő*

In this study, we investigated how the hosting of the Olympic Games affects the number of medals won at the Games, known as the host effect. For this purpose, we employed the results of six Summer Olympic Games as a quantitative case study. Using synthetic control estimators, we find that host effects are highly heterogeneous, only positive for some host countries in the sample. We employed various test statistics that cast doubt on the significance of the estimated effect. When examining the host effect by gender, the results provide even less evidence for the presence of a host effect. Our results support the findings of recent studies (Csurilla & Fertő, 2023; Singleton et al., 2021). As we have shown with the S-method, the host effect is difficult to detect if hosts are examined separately. Furthermore, presumably the difference from previous studies where the host effect was clearly detected is due to the corresponding control variables (sport, country, or Olympic fixed effects). The organising country always has a say in the Olympic programme, and they typically attempt to include sports in which they expect to win medals. If we consider only the raw data, for almost all countries there is a spike. Presumably, Olympic and sport fixed effects eliminate the medals won by the host country in the new sports on the Olympic programme. This may also explain why previous studies have failed to provide clear evidence of a long-run effect (Barbosa et al., 2016). As with studies on the absence or decrease of the host effect, we can contribute to questioning the arguments for hosting the Olympics. Not only does the surplus medal have important social aspects, it can also have indirect economic effects. But if we cannot talk about either direct or indirect economic effects and social happiness, then the arguments for hosting the Olympics will begin to fade.

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Are Olympic Winter Games Perceived as too Large and Expensive? Evidence on the Attitudes of German Residents | *Markus Kurscheidt, Kristoff Reichel & Christian Brandt*

The 2022 Olympic Winter Games in Beijing again have been controversial in at least two respects. First, under the Covid-19 conditions, the Games were largely a media event. Second, Beijing was the first Olympic host to stage both Summer Games and Winter Games. This honour could have been bestowed to Munich, Germany. Yet, the referendum on the bid for the Winter Games 2022 failed (Könecke et al., 2016; Coates & Wicker, 2015). Instead, after the 2014 Winter Games in Sochi, the event has been awarded once more to a country governed by an authoritarian regime criticised for its disrespect of human rights and green washing (Könecke et al., 2016; Könecke & de Nooij, 2017). Generally, Olympic Games are controversial in the public debate for being too large in terms of the numbers of athletes and competitions. As a result, residents of bidding and hosting cities often perceive the Games as too expensive, given this size of the mega event. Indeed, the evidence on organizing costs of the Olympics support this view (Müller, 2014; Preuss et al., 2019). Könecke et al. (2016), for instance, found that the financial burden of hosting the Winter Games was a major issue in the media coverage in Germany prior to the failed referendum in Munich. This can be supposed to have influenced the negative outcome of the voting based on earlier findings for other cases of Olympic bids (Kim et al., 2015). Against this background, the question arises which constructs determine the attitudes towards the Olympics as being too large and expensive. This study focuses on an online survey in Germany by the time of the 2022 Winter Games (N=418). In addition, the data may be compared to earlier results on the 2014 and 2018 Winter Games when largely the same methodology and questionnaire was applied (Kurscheidt & Prüschenk, 2020). There is a growing body of literature discussing the concept of Olympic legacy. This research focuses on the sustainable socioeconomic impacts of staging the Olympic Games for the hosts (Scheu et al., 2019). Many studies detect the costs and planning of the substantial infrastructure needed to accommodate the large numbers of athletes and competitions as a major challenge to create a positive legacy outcome. The residents of bidding and hosting cities of the Games are increasingly aware of this problem. This is shown by available studies on the attitudes of residents towards hosting the Olympics (Karadakis & Kaplanidou, 2012; Kim et al., 2015; Prayag et al., 2013; Scheu & Preuss, 2018). However, not much is known on the general attitudes of residents towards the size and costs of staging the Games. Thus far, Kurscheidt and Prüschenk (2020) were the first to focus on this question in the context of the 2014 Winter Games in Sochi. They found that the size of the mega event is perceived less problematic than the costs. In particular, a positive perception of Olympic values, ceteris paribus, significantly reduces the criticism of the size and costs of the Games.

These theoretical and empirical insights from earlier survey research on Olympic values are tested in this study on the above-mentioned data set. Compared to the restricted sample size of the discussed previous studies (N=192 for the 2014 survey on the Sochi Games; Kurscheidt & Prüschenk, 2020), the sample of this 2022 online survey (N=418) is more satisfying. It is nearly as large as the same follow-up survey on the 2018 Winter Games at Pyeongchang (N=438; not yet published). In all three surveys, the respondents were German TV spectators of the Olympics. The approach is a multipurpose survey on Olympic issues which may be understood as cross-sectional 'barometer of public opinion'. The questionnaire comprises 21 questions, many of which structured in item batteries that already proved to be reliable and consistent in the earlier studies on 2014 and 2018 Winter Games (Cronbach's alpha acceptable to good also for the current 2022 sample). The attitude measurement uses the intuitive 5-point Likert scales throughout (partly with zero for 'don't know') that were shown to be statistically equivalent to larger scales in methods research (Revilla et al., 2014). Finally, 45 variables could be defined from the data set with two proxies on the size of the Games as dependent variables: (1) TOOLARGE for the attitude that size of the Olympics is too large in terms of athletes and competitions; (2) TOOEXPENSIVE for the view that the staging of the Games has become too expensive for Olympic hosts. Overall, there are separate questions and item batteries on five determinants of the overall attitudes towards Olympic Winter Games: (1) perception of Olympic values (e.g., 'the Olympic idea is important to me'), (2) interest in sports and the Olympics, (3) preferences towards the event product of the Olympic Games (e.g., competitions, opening ceremony), (4) attitudes towards critical issues and objectives of staging the Olympics and of the Olympic system (e.g., commercialisation, size, infrastructure) and (5) sociodemographics. Invitations to the online survey had been promoted during and shortly after the 2022 Beijing Winter Games from 4 February to 8 March 2022. This period was characterised by negative media coverage on China and games. Topics, such as violation of human rights towards the population group of the Uyghurs and issues of the rigid management of COVID-19 in China, were dominating the publicised opinion in Germany. Therefore, the sample may be understood as representing a 'natural experiment' with a rather negative social environment for the opinion making regarding the 2022 Winter Games. N=441 respondents accessed the questionnaire of which N=346 (79%) fully completed (Note: only N=261 (59%) with age specified due to a technical mistake; yet, this is still larger than in the 2014 survey). Moreover, it should be noted that the age group of 20 to 29 years (students 52%) is dominant. However, a control group design is given in the data insofar as respondents with no or low interest in sports and the Olympics as well as older age groups are present in the clustered sample as well.

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Are Olympic Winter Games Perceived as too Large and Expensive? Evidence on the Attitudes of German Residents | *Markus Kurscheidt, Kristoff Reichel & Christian Brandt*

As a first descriptive finding on TOOLARGE and TOOEXPENSIVE, it is striking that 43% tend to believe that the size of the Games is too large (modest to agree). Only 12% (somewhat) agree to this question of size. This is substantially lower than in the earlier study of Kurscheidt and Prüschenk (2020) on Sochi 2014 (23%). On the opposite, the respondents have become more critical towards the costs of staging the Winter Games with 76% of agreement compared to 57% in the Sochi study. This underlines the need for the International Olympic Committee (IOC) to further develop concepts that are aimed to reduce the staging costs of the Olympics. Moreover, communication policies should be pursued to improve the perception of the costs of hosting the Games. On the other hand, it is interesting to note that the respondents apparently appreciate the inclusive character of the Games by giving a large number of nations, athletes and sports the opportunity to participate. This is consistent with the finding that, in all three samples, still 62% to 64% deem the Olympic idea important and amazing 82% to 93,6% appreciate the Olympic idea as integral part of the Games. Moreover, the respondents do not seem to be overcharged by the sheer size of competitions. They rather enjoy the variety of sports and athletes presented at the Games. Yet, this size and growth of numbers at the Games is a driver for the costs of staging the mega event (Preuss et al., 2019).

These insights are confirmed by the regression results. Variants of (ordered) logit regression models are run on TOOLARGE and TOOEXPENSIVE following the estimation strategy of Kurscheidt and Prüschenk (2020). Overall, it is found that a positive perception of Olympic values significantly and dominantly reduces the criticism of the size and costs of staging the Games, all else equal. In addition, the respondents do not see a conflict between the value and sports orientation of the Games and the business side of staging the Olympics. This may be interpreted that the respondents call for better organising concepts of the Games that balance social or sports objectives versus business interests. Leaving other interesting observations of the evidence aside, the result on the view that the Olympics are ‘nice to have’ is intriguing. NICETOHAVE is a highly significant, negative predictor for TOOEXPENSIVE. This suggests that thematizing the Olympics as an enjoyable (luxury) good, which is affordable for a wealthy country, such as Germany, and worth the costs, may be effective in the communication policy of hosts and the IOC. Interestingly, this is in line with the earlier findings of Preuss and Solberg (2006). In conclusion, the presented new evidence is largely consistent with the study of Kurscheidt and Prüschenk (2020). However, the attitudes towards the costs of staging the Games should be a focus of reforms and communication of the IOC and future hosts while strengthening the perception of the Olympic idea.

7: DESIGN | WW8: 9.00

Round-Robin Tournaments with Two and Three Games per Team: Evidence from Beach Volleyball. | *Alessandro Di Mattia & Alex Krumer*

Fairness is one of the central axioms of tournament design. A fair tournament should maximise the association between competitors' strength (i.e., pre-tournament ranking) and their final position (Scarf et al., 2009). This means competitors' ranking should naturally follow their winning probabilities (Groh et al., 2012). Sports contests are a natural setting for studying tournament theory since agents must cooperate to reach a common goal while competing against different opponents. Tournament's structure heavily affects the path of a team, their winning probabilities, and the effort they exert. Hence, it is extremely important to design tournaments that properly express teams' qualities. On March 14, the FIFA Council approved a new competition format for the FIFA World Cup 2026. The new format features 12 pools of four teams with the top two and eight best third-placed teams advancing to the round of 32. This implies an increase from 64 to 104 in the total number of games played as well as in the length of the competition with 39 days compared to the previous 32. The question is whether it is possible to have a different tournament format that satisfies the above-mentioned criterion of fairness. Beach volleyball' tournaments provide an ideal opportunity to test tournament fairness given their ranking-based structure and the recent structural change many of the World Tour tournaments experienced. The World Tour is one of the three main international beach volleyball competitions and the only one that consists of multiple tournaments over the year. Before 2017, most top-level tournaments had 8 pools with 4 teams each. Teams used to play against each other for a total of 3 games per team in a round-robin tournament. The first qualified in the pool advanced to the quarterfinal, while the second and third advanced to the round of 16. The tournament then followed a single-elimination format to determine the winner. After 2017, the number of matches played by each team in the pool stage decreased to two. In the new format, the highest-ranked team in the pool competes against the lowest and the second against the third in the first round. In the second (last) round, the two winners face each other and so do the losers. The pool winner advances to the quarterfinals, while the second and third advance to the round of 16. The elimination stage did not incur any structural change and therefore was kept unchanged. The research question of this paper aims to investigate whether this change from a round-robin system with 3 rounds to one with 2 rounds affected teams' winning probability as well as the relationship between their pre-tournament raking and their final standing.

We collected data on eleven FIVB tournaments: two 5-star (Gstaad and Fort Lauderdale), eight 4-star tournaments (Yangzhou, The Hague, Xiamen, Doha, Itapema, Jinjiang, Moscow, and Las Vegas) and one 3-star tournament (Kish Island) with similar characteristics in terms of money prize and playing conditions. Information on matches, teams, nationalities, and their rankings were available at http://www.bvbinfo.com/. Teams are seeded in tournaments according to their FIVB Seeding Points, given by the sum of the two individual athletes' Entry Points on the date of the Preliminary Inquiry of a tournament. Athlete Entry Points are, in turn, the points earned by the player at the best six of the last eight FIVB World Tour and World Championships events within the last year and 21 days before the start of the tournament. Moreover, matches' information on the number of points, number of sets, and the match's duration were provided for each match. The final dataset includes 3717 observations, of which 37 are matched ended for the forfeit of one team and 16 for a team retired. Nine of the eleven tournaments have data for both men's and women's competitions. We decided to structure our analysis on two levels: individual match and pool level. For each match, we defined the favourite as the higher-ranked team and the underdog as the lower ranked. The dependent variable is a binary variable that takes the value 1 if the favourite won the match, and 0 otherwise. Given the nature of the dependent variable, the choice of the model fell on the logit model. Another binary variable (treatment) was created to capture the effect of the change, taking the value of 1 for the new pool format, and 0 otherwise. The set of controls includes ranking for both favourite and underdog, tournament's money prize, and whether a team was playing in its home country (home advantage). Similarly, we have aggregated data to have a unique observation for each team in each pool match. In that case, we compare the final standing of the teams before and after the change as function of the teams' pre-tournament rankings. For that, we used a Poisson regression, where we controlled for home advantage and different tournament characteristics. Finally, as a preliminary robustness test, we checked whether there was any significant difference in the number of points and minutes played by teams before and after the change.

We find that there is no significant effect of a change in the tournament format on the probability of the favourite team winning nor on the final ranking of the teams. Taken together, our results suggest that the transition from a round-robin with 3 rounds to one with only 2 rounds did not affect the fairness of the tournament. Thus, our results imply that other tournaments (e.g. FIFA World Cup) may adopt this format with a little concern that it will affect the outcome on the pitch.

7: DESIGN | WW8: 9.30

What We Can Learn from the Difference Between League and Cup Football matches? | *Martin Van Tuijl & Jan Van Ours*

In most football leagues, every team meets every other team twice during the season, once at home and once away. It is well-known that football matches – like many other sports matches – are characterized by home advantage. The nature of home advantage is not perfectly clear, but numerous studies have shown its presence. Football clubs do not only participate in a league competition; they also participate in at least one cup tournament. In England, for example, there are even two cup tournaments, viz. the FA-cup and the League Cup. Cup tournaments are featured by a knock-out system. Losers are out; winners proceed to the next round. This continues until only two teams are left. These two teams play a final match. The winner is awarded a trophy, a domestic cup. In some cup tournaments, every round has two matches, in other cup tournaments there is only one match. A draw does not only determine which teams play against each other, but also which team enjoys a (the first) home match. Notably, in some cup tournaments, during later stages, matches are played on neutral grounds. Few studies have analyzed differences between cup matches and league matches. Dixon and Coles (1997) presented an analysis of English league and cup football-matches in the early 1990s, but they do not consider potential differences between these two types of matches. Instead, they use cup-matches for identification, because in these cup-matches often teams from different leagues play against each other. Szymanski (2001) used this feature of the cup competition, because it implies that cup-matches are much more unbalanced than league matches. The focus of his analysis was on the relationship between competitive balance and stadium attendance. He compared attendance in English FA Cup matches with equivalent league fixtures played in the same season. Szymanski (op. cit.) found a relative drop in stadium attendance for FA Cup matches. Up to the mid-1980s, attendance at FA Cup matches was substantially higher. However, in the last decade of the 20th century attendance was about the same. Szymanski (2001) attributed this to the FA Cup becoming a more unbalanced tournament. Pollard and Pollard (2005) provided an overview of home advantage in professional football, indicating that, in the English FA Cup, home advantage is lower than in the English league competitions, especially in later stages of the tournament, when the home advantage disappears.

We use data from Dutch professional football where every cup round exists of one match only. Therefore, there are clear differences between league matches and cup matches. Two teams meet each other twice in the league competition. However, they only face each other once in the cup tournament. In a cup tournament, few teams play against each other, due to the knock-out system. In a cup-match, there is potentially more at stake than in a league match. in particular in later stages of the cup tournament. First, a win ensures further participation in the tournament. As the tournament progresses, the probability of winning the trophy increases. This prize may also give access to a European football tournament. Thus, proceeding to the next phase of a cup tournament may make winning more attractive than in a regular league match. Two teams competing make the largest effort when they are equally strong, because then effort may make the difference. With uneven matches, i.e. with a large difference in strength, both the stronger and the weaker team have an incentive to reduce effort, since the marginal effect of the effort on match outcome is smaller. Effort may also depend on the rewards. Depending on the strength of the opponent, the potential rewards of winning the match affect the amount of effort that teams want to invest in a game. Although we cannot directly measure effort, we assume that effort is proportional to success, which would imply that the home advantage is more important in cup matches than in league matches. Our data from Dutch professional football are from the seasons 2005/06 up to and including 2021/22. During that period the only cup tournament consisted of one match in every stage. For every cup match, we compare the outcome to the outcomes of matches between the two teams in the league competition. So, if there is a cup-match between team A and team B, we compare this match with the league matches A versus B and B versus A in the same season. For every cup match, we have two league matches as comparisons. We investigate, whether there are differences between cup-matches and league-matches in terms of match attendance and match outcomes. We also examine, whether there is a difference in home advantage. Our data allow us to establish the home advantage in regular matches by combining information from the league matches and the mirror matches.

7: DESIGN | WW8: 9.30

What We Can Learn from the Difference Between League and Cup Football matches? | *Martin Van Tuijl & Jan Van Ours*

We find that the match results in terms of home win, draw or away win are very much the same for the non-final cup matches group. About 45 percent of the matches result in a home win, about 25 percent in a draw and about 30 percent in an away win. For the league matches the difference between home wins and away wins is bigger than for cup matches and mirror matches. From these differences, we can calculate the home advantage.. The average home advantage is 0.16 in terms of home wins and 0.41 in terms of goal surplus. Our estimates show that cup matches, on average, have about five thousands fewer stadium attendants than league matches. The difference in stadium attendance increases with the stage of the cup tournament, except for the semi-finals, when the difference is no longer significant. For the determinants of match outcomes we find that the win probability is positively affected by the home advantage, whereas there is no difference between cup-matches and league-matches. The parameter estimates for the number of match points are very similar to those for the win probability, with the notable exception that stadium attendance seems to have a positive effect. Our main finding is that there are few differences between cup matches and corresponding league matches in terms of the major determinants. This does not mean that the outcomes are very similar. There is a wide variation in outcomes when the two matches are compared one by one. It is also clear that all matches are influenced by a strong home advantage. Since cup matches are played only once, the home team in a club match has a strong advantage, which implies that unfairness is incorporated in the set-up of the Dutch cup competition, albeit that this unfairness is determined by a draw. Contrary to studies done in England, we do not find that the home advantage becomes smaller in later stages in the cup tournament.

7: DESIGN | WW8: 10.00

Format and Schedule Proposals for a FIFA World Cup with 12 Four-Team Groups | ***Mario Guajardo & Alex Krumer***

In January 2017, the FIFA Council decided to expand the FIFA World Cup (denoted by FWC henceforth) from 32 to a 48-team competition as of the 2026 edition. The initial proposal was to split the 48 national teams into 16 groups of three, such that the top two teams from each group advance to a single-elimination tournament starting from the last 32 and finishing with the final. This structure guaranteed important features such as a maximum of seven games for the teams reaching the final as was used in the previous World Cups and an overall length of the tournament of no more than 32 days. However, a group stage of three teams has a serious drawback of a possible collusion (Guyon, 2020). More specifically, in a group of three teams with two qualifiers, it is possible that in the last game, both teams would know the exact result they need for advancing to the knockout stage, possibly at the expense of a third team. A notable example is best known as the "Disgrace of Gijon", which refers to a game between West Germany and Austria that took place in Gijon, Spain, during the 1982 FWC. Although FIFA decided that the teams did not break any rule, it also decided that starting from the 1986 FWC, the last two games of a group must take place simultaneously. Obviously, two simultaneous games within a group are not possible if the group consists of three teams. After much criticism regarding this three-team group structure, the FIFA president Gianni Infantino pointed out that FIFA should rediscuss the proposal for the next World Cup. In particular, his and other FIFA officials' statements signaled that the 2026 FWC might feature 12 groups of four instead of 16 groups of three teams. While this would allow mitigating the potential risk of collusion, it also opens the question of what should be the format and the schedule of the competition as to accommodate such 12 groups of four teams. An awkward complication arises from the fact that 12 is not a power of two. The progress of group winner and runner-up to the knockout stage would select 24 teams, thus the traditional single-elimination sequence would not arrive at two clear finalists, as it is now with the 16-team bracket. A straightforward option to fix this is to select eight best third-placed teams, which together with the two top teams of each group, would compete in a single-elimination tournament from a round of 32 until the final. However, the large number of games associated with such a format might compromise other criteria such as the upper bound of seven games per team and the overall length of the tournament. All these obviously also raise environmental concerns.

The aim of our paper is to develop possible tournament formats and schedules for a FWC with 12 groups of four teams. It is important to note that allocating teams in the elimination stage of a tournament whose number of groups is not equal to a power of two might suffer from important issues such as arbitrariness and unbalanced pairings (Guyon, 2018). However, we do not aim to compare the efficacy of each format, but rather generate alternatives that would enhance FIFA's ability to feature a World Cup with 12 groups. To this aim, we design two alternative formats, which to our knowledge have not been used before in major football tournaments. In addition, we outline a schedule of games for each of these formats, attempting to meet the following criteria: 1Non-collusion, 2Rest days, 3Number of games in total, 4Maximum number of games per team, 5Minimum number of games per team, 6No dead rubbers, 7Fans travel planning, 8Balanced brackets and diversity, 9Number of days without games.

The first tournament format resembles the format used in beach volleyball where each team in the group of four teams plays only two games. The first round has a pre-determined allocation such that the highest pre-tournament rank in the group plays against the lowest rank, whereas another game features teams that are ranked second and third. In the second round of the group stage, the winners of the first round play against the losers of the first round. The top two teams from each group qualify to the elimination stage. While the best eight winners of the group stage qualify directly to the last 16 stage, the remaining qualifying teams (four other group winners and 12 runners-up) play in the qualification stage. Then, the eight winners of this qualification stage advance to the last 16 stage, where they join the previously mentioned eight best winners of the group stage. From there, the tournament is the same single-elimination format used in all previous World Cups (starting from 1986).The second format is based on the usual design where each team plays three games in the group stage and the top two teams qualify to the knockout stage of the tournament, pairing winners and runners-up from different groups to create a 24-team bracket. From there, it resembles the usual single-elimination structure, but as there would be 24 teams in the knockout stage, we need to make some adjustment before selecting two finalist teams. We make this adjustment right before the final, meaning that there will be stages of 24, 12, and six (instead of 16, eight, and four as it is in the current FWC format). After the three winners of the round of last six are known, the best winner qualifies directly to the final, whereas the other two play in an "extra semifinal". The winner of this game qualifies to the final, while the loser is ranked third. Thus, this structure eliminates the need for the third-place game, which is widely considered unimportant.

7: DESIGN | WW8: 10.00

Format and Schedule Proposals for a FIFA World Cup with 12 Four-Team Groups | ***Mario Guajardo & Alex Krumer***

Our formats create clear incentives to perform for all teams at all moments of the competition, and help reducing chances of dead rubber games, although these persist when two teams lose their first two games and meet each other in the third round of the group stage. In addition, in our formats there is a significantly lower number of games over a shorter period compared to the FIFA's proposal, which is the main criticism towards the FIFA's proposal. In general, we foresee our proposals may become a viable option for the coming FWC editions, adapting to the disruptive increase from 32 to 48 teams while retaining a great share of the most traditional features of the event.

7: DESIGN | WW8: 10.30

National League Design and the International Competitiveness of Football Clubs | *Szczepan Kościółek*

According to Terrien and Andreff (2020), the governing bodies of football leagues aim to maximise four main objectives: the uncertainty of league game outcomes, the stock of talent within the league, the financial stability of clubs, and the international competitiveness of the league's clubs. Although leagues can influence these goals, they face the challenge of trade-offs between them. For instance, if league managers prioritise the international competitiveness of clubs by increasing the shares of the best teams when dividing TV broadcasting revenues, this could come at the expense of reducing the uncertainty of domestic results. However, some instruments that affect the uncertainty of outcomes, such as the format of league competition, may appear neutral towards other goals. The research question is whether this is indeed the case; that is, does the format of league competition affect the international competitiveness of clubs? Currently, there are 54 national football leagues in Europe that use eight different competition designs based on the round-robin system (UEFA Intelligence Centre, 2022) . There are two criteria for distinguishing between round-robin formats in European domestic competitions: the number of rounds, and the traditional versus split-season format. The number of rounds varies from two to four, and 33% of all leagues split the table at some point during the season, with clubs competing against a select number of rivals based on their previous performance. The double round, with one game at home and one away, is the most popular format (applied by 17 leagues, including all representatives of the so-called TOP5), followed by the triple round (used by 5 leagues), the quadruple round (used by 13 leagues), and various options for splitting (such as two-plus-one, two-plus-two, three-plus-one, or one-plus-two). Additionally, each tournament design may be applied in the winter (in most cases) or summer calendar (in 11 cases).The issue of tournament design is on the agenda in the sport management literature. To date, most studies on the issue of competition design have focused on the impact on home advantage and stadium attendance (see, for instance, Krumer & Lechner, 2018). However, little attention has been paid to the relationships between tournament design and sport performance. Berker (2014) noticed that the relative ranking of two teams could be influenced by the games in which neither team was involved. Krumer (2020) found that games at certain hours reduce the home advantage in the UEFA Europa League, while Haugen and Krumer (2021) pointed out a series of shortcomings that could emerge based on how a tournament is designed. These include the incentive to lose play later with the 'right' team, incentives to be the worst, and the lack of incentives to win. Considering that we have evidence that under certain conditions, the domestic and international competitiveness of clubs are correlated to some extent (Cabras, Delogu & Tena, 2022), the aim of the study is to verify whether tournament design affects the sport performance of clubs in UEFA international competitions.

To answer the research question, we collected league-level data for the sport performance of football clubs in UEFA competitions for the past five seasons (2017/18 – 2021/22). This provided us with 270 observations in total, which were tested in a series of regression analyses. Sport performance was the dependent variable in our models and was measured through contribution to the country's UEFA coefficients and win ratios. Our explanatory variables were league formats and included double round-robin (DOUBLE), triple round-robin (TRIPLE), and quadruple round-robin systems (QUADRUPLE), as well as two-plus-one splits (SPLIT_2+1), two-plus-two splits (SPLIT_2+2), the summer/winter system (SUMMER=1), and others (OTHERS). These were all coded as dummy variables with the most common DOUBLE as the reference. The study also included control variables such as league revenues, concentration ratios, years (SEASON), and number of teams within the leagues (TEAMS). To align with previous research (see, for instance, Garcia-del-Barrio & Szymanski, 2009), the logarithm of revenues (LN_REV) was applied. Although the most accurate measure of a league's sport potential would be the inclusion of wages or revenues at the club level, these data were not available for leagues outside of the top. Instead, we estimated the interaction term between revenues and the concentration ratios of sporting results in the league. Through pilot studies, it was found that the interaction of LN_REV with the concentration ratio for the top two teams in the league (CR2) was the most accurate predictor of European competitiveness. Until the conference takes place, we will collect data for the entire five-year period of analysis from the following sources: UEFA coefficients and win ratios from the Kassiesa database, league revenues from UEFA reports, and competitive balance measures from our own calculations of league points sourced from the Sofascore.com website. We have thus far collected data for three seasons (2017/18, 2018/19, 2019/20). The findings presented below should therefore be considered as the outcome of preliminary research.

7: DESIGN | WW8: 10.30

National League Design and the International Competitiveness of Football Clubs | *Szczepan Kościółek*

The preliminary results provide models that fit the empirical data well (R2 > 0.70). These models indicate that the format of the competition, including DOUBLE, TRIPLE, QUADRUPLE, and all split formats (SPLIT_2+1, SPLIT_2+2, SPLIT_3+1), does not differentiate the international competitiveness of European football clubs. However, the adaptation of the summer/winter calendar of the season weakens the international competitiveness of clubs ($\beta SUMMER = -0.701$; $p < 0.05$). The most influential variable that predicts international sport performance is the interaction effect between the total revenue of the league and the concentration ratio of the top two teams within the league. These findings are from the main model (1) and are confirmed by robust analyses.

The results support the main idea of the study that sports league governing bodies can use the instrument of tournament design to influence the uncertainty of the outcome within the league without making trade-offs with the other objectives they want to maximise (Terrien & Andreff, 2020). Considering the role of scheduling intensity, which arises from playing in multiple competitions during a given season and affects the sport performance of clubs (Cabras et al., 2022), we can conclude that it is not the format of the competition, but rather the plan of the schedule that makes the difference in the sport performance of domestic clubs in UEFA competitions.

8: COMPETITION| WW9: 9.00

Advancing the Measurement of Competitive Intensity: An Examination of the German Bundesliga | *Adam McCarthy*

In 1956, Simon Rottenberg published the original article in sports economics. Rottenberg identified that, in the business sense, professional sport leagues are an anomaly on the basis that no club can achieve success if the gap in quality between teams is too significant. He hypothesised that competitive balance (CB) fosters uncertainty of outcome and, subsequently, public demand. CB has since become a theory of paramount importance in sports economics and is a pertinent theory in North American professional leagues. However, in many professional football leagues, only a few teams are effectively competing for the championship. An extreme example is the German Bundesliga, where Bayern Munich have won ten championships in a row. Nonetheless, the Bundesliga had the highest attendances in the world from 2013-18 which illustrates a breakdown in CB. Similar observations can be made in other European football leagues. Competitive Intensity (CI) suggests that there is another major influence in the demand for sport as, apart from sporting quality equilibrium, interest is also generated by the degree of competition within the league's prize structure. CI acknowledges that leagues often do not have the sole competition of winning the league. In European football, this prize structure usually consists of the championship, qualification for UEFA competitions and avoiding relegation. CI is a 'more innovative notion' and is an appropriate idea from an economic standpoint to encapsulate the value of a sport league. Being in contention in sub-competitions elicits excitement which positively influences public demand. As a relatively modern concept, the line of literature on CI is not abundant. There have been a handful of contributions which develop a CI measurement. Scelles et al. identified that fluctuations must be included, meaning when a team ends up in contention for a different sub-competition after a matchday. They introduced intra-championship competitive intensity (ICCI) which is made up of two parameters. Intra-championship uncertainty (ICU) conveys the possibilities of fast sub-competition fluctuations in the standings. Intra-championship fluctuations (ICF) considers the number of fluctuations on an average matchday. ICU is considered to possess greater importance. However, there are subjective choices in the methodology. There is also no combined ICU and ICF parameter. Furthermore, the two indicators do not offer individual values for each sub-competition's CI contribution. Wagner et al. introduced their own ex-post numerical measurement of seasonal CI, the CI-Index (CII) Model. The model is founded on a graphical analysis and an intuitive weight. The method gives insights into the individual CI contributions of sub-competitions. It is flexible and can compare leagues with differing numbers of teams and sub-competitions. However, it does not consider league evolution. The purpose of this paper is to contribute to the research gap that has been left open by the limitations of previous CI measurements. Using these two CI approaches simultaneously has never been explored before. Furthermore, the CII Model is modified and an examination is undertaken on the effects of including additional sub-competitions in this model.

Scelles et al. proposed two parameters for ICCI. ICF corresponds to fluctuations in states in the standings. The calculation which corresponds to ICF is: The number of fluctuations in states in the standings during the entire championship / (Number of game weeks – 1). ICU measures 'the percentage of teams with the possibility of fast states fluctuation in the standings.' It is derived from the percentage of teams with, in the following two matchdays, the possibility of fluctuation in their sub-competition state in the standings. These percentages are determined at eight saved moments and then the mean value is derived. The matchday moments considered are a third of the way into the season, halfway through, two thirds in and each of the last five matchdays. They are subjectively chosen with the justification that stakes are more important towards the end of a season. Wagner et al. originally illustrated the CII model given four sub-competitions: the championship race (C), Champions League qualification including its qualifiers (CL), Europa League qualification including its qualifiers (EL) and avoiding direct relegation (adR). This paper refers to this as the Basic Model. The CII for each sub-competition is gauged by computing the surface area of a corresponding parallelogram on the CII Diagram. These parallelograms come from the averaged path of a team qualifying for each sub-competition, given that the team achieves the lowest final point total that is necessary for qualification. For example, the CL parallelogram value comes from the points earned by the lowest placed team to gain entry to the Champions League. The maximum value is given when a sub-competition is decided with a total of 50% of the points attainable in the season. This is then multiplied by a squared matchday ratio as sub-competitions with high CI should remain competitive until late in the season. The matchday-ratio is 1 if the sub-competition is up for grabs until the final matchday. The theoretical maximum of the CI Indices for a sub-competition is 2500. Modifications have been implemented including a CI Season Average value to allow for broad comparisons of leagues with varying structures. For the first time, CL and EL qualification is segmented between direct and indirect qualification. Therefore, the sub-competitions analysed in this study also include Champions League direct qualification (CLd), Champions League qualifier qualification (CLQ), Europa League direct qualification (ELd) and Europa League qualifier qualification (ELQ). Furthermore, for their maiden CII analyses, avoiding relegation playoff (aRp) is added along with the Europa Conference League (CoL) and the UEFA Intertoto Cup (UI). The effect of adding these sub-competitions to the Basic Model is analysed which has not been examined before. The analyses are applied to the Bundesliga for the seasons from 1998/99 to 2021/22.

8: COMPETITION | WW9: 9.00

Advancing the Measurement of Competitive Intensity: An Examination of the German Bundesliga | *Adam McCarthy*

For the first time, two divergent approaches to CI measurement were brought together in an effort to complement each other and to overcome their respective deficiencies. The study period revealed a mildly positive correlation between CII and ICCI measures. The most signification correlation is between CII and ICU. However, there was a significant contrast between the correlation in the first half of the study horizon and the second half, with a shift from moderately positive to weakly negative. This shift may be due to the decreasing number of sub-competitions decided on the final matchday in the latter years and the emphasis CII places on this. This inconsistent correlation highlights the different approaches used in the calculations. To address their limitations, the models can be considered side by side to produce a more extensive insight into CI. An analyst can look at the measures and, depending on their preferences, focus on an indicator that aligns with their objectives. This is in line with other economic analyses, such as inequality economics, which use various metrics to paint a broader picture. Examining different CI measures together can alleviate flaws and offer a clearer and comprehensive depiction of the intricacies of CI in a league. Furthermore, the study employed ICF in a way that has not been undertaken before in order to generate results for the CI of individual sub-competitions. This interestingly provided notably similar values to that of CII in relation to trends within each sub-competition. For the first time, the paper also inspects the impact on CII of adding extra sub-competitions. The Basic Model was extended with CLQ, ELd, ELQ, CoL and UI and aRp added. The study introduced a methodology to compare seasons with different numbers of sub-competitions. The most significant finding is that when a sub-competition is introduced to the Basic Model, the CII average of the relevant seasons always increases. Furthermore, the sub-competitions closer to the middle of the table consistently resulted in the highest increases in CII. Qualifiers for European competition and playoffs for relegation boost league CII and create more excitement. This CII approach of adding sub-competitions and examining the CI Season Average opens the door for future research comparing varying league structures. This also shows the importance of maintaining attractiveness when it comes to the newly formed Conference League and how offering appealing prizes within a league boosts CI. The findings also observe that the championship is consistently the least competitive sub-competition and it seems a change may be necessary to see Bayern Munich's reign come to a halt. This change could take form in an overhaul of the strict German football ownership rules or a revamp of the Bundesliga structure. These findings have practical implications for policymakers as they suggest that the inclusion of sub-competitions can enhance CI and improve demand. The study also highlights the need for further research on CI and its relationship with league structures, especially in an era of 'Super League' proposals.

8: COMPETITION | WW9: 9.30

Competition in the Provision of Recreational Services: For-Profit and Non-Profit Equestrian Providers | ***Dennis Coates, Svenja Feiler, Pamela Wicker & Christoph Breuer***

Competition between for-profit and non-profit providers of services, has been widely studied, including health studies on nursing homes and hospitals (e.g., Duggan, 2002; Grabowski & Hirth, 2003; Hirth, 1997, 1999; Keeler et al., 1999). Competition between for-profit and non-profit providers of recreation services is the subject of a small but growing literature (Rossi et al., 2019). For example, a Danish study examined potential crowd-out effects in the provision of for-profit and non-profit fitness centers (Storm & Hansen, 2019). However, examinations of the competition between for-profit and non-profit sport providers has largely been neglected. This research studies the extent to which prices charged for equestrian activities are affected by the prices and proximity of other providers of those services with a different legal form. Specifically, we advance three main research questions: (1) Does the effect of proximity to non-profit clubs and for-profit providers differ between types of providers? (2) Do price offerings of a provider vary differently with prices of non-profit and for-profit competitors? And (3) are prices related to the service mix provided by the club and its neighbors? German equestrian providers are an appropriate setting for this study because for-profit and non-profit equestrian organizations provide identical services ,belong to the same national governing body (Wicker et al., 2012) and operate in the same market. The theoretical literature explains the existence of non-profit and for-profit providers in the same market with the existence of cost advantages for non-profits (e.g., Enjolras, 2002; Weisbrod, 1988) and non-profits demonstrating the market potential (Tuckman, 1998), with for-profits following them into viable markets. Theory indicates that non-profits provide information for the uninformed consumers (Arrow, 1963; Hansmann, 1980) that restrains prices of for-profits and assures higher quality; similarly, theory suggests lower prices and higher quality for the non-profits (Crompton, 1998) as well as greater durability in the event of an economy-wide downturn. An open question in the literature is the geographic scope of the market and how best to implement this in empirical research. Some empirical work uses the county in which the providers are located to define the relevant market (e.g., Duggan, 2002; Grabowski & Hirth, 2003), while other work uses the zip-code of the consumers of the services (Keeler et al., 1999). Equestrian sport has previously been used to compare for-profit and non-profit providers in terms of generated sponsorship income (Wicker et al., 2012) and organizational performance (Nowy et al., 2015). The latter study showed advantages of non-profit clubs over for-profit providers regarding price levels for riding lessons for children, youths, and adults as clubs were able to offer cheaper prices. However, the effects of local competition between these two legal forms of sports providers on their pricing has not been investigated. Existing research studying the determinants of prices for riding lessons has examined the role of location (Hess et al., 2014): Distance to the next riding school was insignificant, while the legal form of the riding school was not considered.

In this study, geographic proximity is a component of the definition of the market. Data stem from nationwide online surveys of German equestrian sport providers conducted in 2011, 2013, and 2015. Overall, the unbalanced panel data set of non-profit equestrian sport providers includes n=3,210 cases and the unbalanced panel data set of for-profit equestrian sport providers in includes n=1,634 cases. Of the total of 4,844 cases, 54% are in the data only one of the three waves of the survey. Another 35% are in two, frequently not consecutive, waves and only 11% are in all three waves. Whether in only one, two or all three waves, the split between non-profit and for-profit is between 65%-35% to 70%-30%, about the same as within the whole sample (66% not-for-profit, 34% for profit). The data include the zip code and a latitude and longitude for each provider of equestrian services. Using this information, distance between providers is approximated. For example, within the sample, the nearest provider is on average 6.0 km with a minimum of 0 and maximum of 45.67 km. For-profit providers are 6.03 kms from the nearest competitor, while not-for-profits are about 5.98 kms from their nearest competitor. The difference of 0.04 kms is not statistically different from zero. More than half the providers of equestrian services in any year are in a zip code with 2 or fewer competitors and over 80% of them are in zip codes with 4 or fewer alternative equestrian centers. These same percentages hold for for-profit and non-profit providers as well. A variety of regression models will be applied to address the question of influence of nearby providers on prices. Simple regressions will assess the influence of distance to competitors on the outcomes of the club or company. For example, one question is whether proximity of a competitor affects prices of services, and a second question is if the relationship is different between non-profit and for-profit providers. Spatial regressions have already been applied in other contexts in sport such as support of the population for Olympic Games (Weimar & Rocha, 2017) or sport facilities (Ahlfeldt & Maennig, 2012). Spatial regression models may reflect correlation only within the error terms, called a spatial error model, spatial correlation among the dependent variables, called a spatial autoregressive model, or the influence of both the dependent variables and explanatory variables from nearby observations on outcomes of their neighbors, called a Spatial Durbin Model. We will test for the appropriate model and report the relevant marginal effects.

8: COMPETITION | WW9: 9.30

Competition in the Provision of Recreational Services: For-Profit and Non-Profit Equestrian Providers | ***Dennis Coates, Svenja Feiler, Pamela Wicker & Christoph Breuer***

Descriptive analysis provides interesting findings. Testing for differences in the age-group specific mean price of riding (vaulting) lessons between for-profit and non-profit equestrian providers reveals that for-profits charge higher prices than non-profits for riding lessons, in each age group, but that the opposite is true for vaulting lessons. Additionally, zip code fixed effects regressions also provide surprising results. Distance to the nearest competitor is never statistically significant in the riding price regressions (one for each age group), but are statistically significant, at the 10% level or better, and negative for the vaulting lesson equations. In addition, the influence is more than twice as big for adulty vault prices as for youth and adolescent prices. Zip code fixed effects are significant in all the riding equations and in the youth and adolescent vault lesson prices, though in the latter at only the 10% level. The zip code effects are not different from zero in the adult vault lesson price equation. Less surprising, given the descriptive statistics discussion above, non-profit clubs charge more for vault lessons but less for riding lessons than do for-profit providers.

8: COMPETITION | WW9: 10.00

Public Interest Considerations in European Sports Competition Policy: The Case of UEFA I *Oliver Budzinski* & *Arne Feddersen*

Sports markets require a market-internal regulator to coordinate the common rules of the game and their enforcement, the schedule, and various other things. In Europe, this role is often performed by a sports association that follows an exclusive hierarchical territorial model (the so-called pyramidal model). In European football, the Union of European Football Associations (UEFA) acts as the market-internal regulator on the European level, national football associations on the national level, and regional football associations on the regional level. More often than not, these associations also conduct commercial activities like organizing competitions, selling broadcasting rights and merchandising, monetarizing brand rights, etc. In economics, we call the situation that the same entity acts as a regulator and as an economic agent a so-called dual role. This dual role creates relevant conflicts of interests as well as economic power and incentives for the abuse of power.

European competition policy exempts restrictive regulations by sports association from the general cartel prohibition as well as from the general prohibition of abuse of market power if the regulation (i) follows a legitimate objective, (ii) is inherent to this objective, and (iii) proportional to the anticompetitive/restrictive effects. In other words, UEFA is allowed to restrict competition within its ecosystem and towards outsiders if this three conditions are fulfilled. Legitimate objectives relate to both aspects that are indispensable for the workability sports market and to public interest aspects. In the literature and in legal procedures especially the integrity of sports, financial solidarity with grassroots and youth sports, health of society, educational and cultural effects on young people, and competitive balance within the sports market are regularly discussed. They largely correspond to goals of the UEFA – and thus serve as a justification for restrictive regulations (self-assigned monopoly privileges, labor market restrictions and transfer rules, budget regulations, etc.). However, stating goals is comparatively cheap talk; the decisive question – and our central research questions – is whether UEFA actually and effectively pursues these goals.

We analyze UEFA's policies towards the stated public interest goals based upon modern industrial economics theory and empirics. We provide a thorough discussion of links between UEFA policies, the restriction of competition, and the achievement of public goals. In the recent past, a sports political and legal perspective have been widely dominating this issue in the public discussion. However, the public discussion is clearly lacking a comprehensive and structured synoptic approach from a combined industrial economics and sports economics point of view. In this contribution, we're focusing on empirical and synoptic analyses of the three most prominently used public interest goals in the public and juridical debate: (a) financial solidarity with youth and grassroot sports; (b) competitive balance.

First, based on publicly available data on revenue generation and distribution, we are providing insights into the degree of which UEFA is adhering to their own stipulated goal of solidarity of the highest level of competition (both from a sporting as well as commercial level), i.e., UEFA Champions League, with other elements of the pyramidal model of European football. An analysis of the money generated and subsequently redistributed to youth football, smaller membership associations and respective league organizations, as well as grassroot league structures and clubs will offer insights. Here, since the revenues from the UEFA Champions League have increased tremendously over time, it is especially interesting to analyze how the redistribution efforts of UEFA have been developed over time – and if the increased revenues and redistribution are aligned. Second, with respect to the question whether UEFA is pursuing the public interest goal of maintaining or improving competitive balance, we synthesize the theoretical as well as empirical literature with respect to two main questions: (a) Have changes in the organizational structure of UEFA competition during the last decades improved competitive balance in those completions as well as in lower-level competitions (i.e., national championships) within the pyramidal model? (b) Do consumer actually prefer competitive balance? Going beyond the consequent synoptic approach, we perform empirical analyses to identify the effects on the three mentioned public goals. Depending on the differing availability of data for different public interest goals as well as the gaps in the existing empirical literature, we apply descriptive statistics, econometric analyses (e.g., DiD-analysis), and other analytical methods.

Our analysis shows that exchanging competition with (economic) power neither theoretically nor empirically contributes to increasing public interest effects – with the important exception of special dimensions of the integrity of sports (e.g. anti-doping rules, multiple ownership rules). Quite in contrast, in some areas UEFA performs significantly worse than comparative leagues and markets, like e.g. regarding financial solidarity or competitive balance. We conclude that the European competition policy approach to sports markets requires an empirical-economic foundation to be sound.

8: COMPETITION | WW9: 10.30

Localization Economies and Firm Productivity: Evidence from Football Teams in Sao Paulo, Brazil | *Brad Humphreys & Amir Ferreira Neto*

Agglomeration economies clearly affect urban economic outcomes. Firms in specific industries tend to cluster together and economic activity tends to cluster in specific areas. Urban firms are more productive because of the spatial concentration of other firms in their industry and because of the urban spatial concentration of general economic activity and population. Agglomeration economies represent especially important urban phenomena in developing countries. A large body of empirical evidence shows that both localization economies and urbanization economies affect firms in cities. Urbanization economies clearly play an important role in the performance of teams in professional sports leagues. The standard model of sports league outcomes emphasizes that teams play in home markets (cities) of different sizes, and that team productivity increases with the size of the home market. This model predicts that teams in larger cities will be more successful than teams in smaller cities; a large body of empirical research confirms this prediction. Standard models of sports league outcomes do not address clustering of teams in cities or assess any impact this might have on outcomes like team success. This appears to be a curious omission, since sports teams clearly cluster in large cities. The greater London metro area currently has 12 teams playing in the top two football leagues in the UK and a large number of top-level football teams in the German Bundesliga are concentrated in the Rhein-Ruhr region. We analyze the relationship between variation in team productivity and the localization of teams across divisions and cities in Campeonato Paulista (CP) in Sao Paulo state in Brazil. Sao Paulo state represents an interesting setting for the analysis of localization and team sports outcomes. With roughly the same area as the United Kingdom (248,222 km^2 versus 243,610 km^2) and roughly the same population as Spain (45,149,486 versus 46,347,576), Sao Paulo state contains substantial variability in population and area across sub-state geographic units. Sao Paulo state contains three cities with a population of more than one million (including Sao Paulo with a population of 11 million) and another six cities with population of more than 500,000. We collect data on team outcomes from the 2007 to 2018 seasons. We analyze both short-term and long-term team outcomes. Short-term outcomes occur within a single season in each CP division and consist of: win-loss ratio, goal differential in terms of goals scored minus goals allowed, and total points accrued in each season. The long-term outcome consists of a novel Elo score reflecting team performance relative to expectations we develop in this paper. Our results show that both localization and urbanization externalities explain football team's short-run and long-run success. Urbanization as proxied by municipality population, increases local football team success, as predicted by the theoretical model. The results also support the importance of localization economies, but the direction of the impact of localization on team success differs systematically by division of play.

The empirical analysis exploits promotion and relegation of teams between divisions to generate variation in the number of teams in different municipalities competing in each division in each season. This generates exogenous variation in localization of football teams in municipalities over time. We define short-term success of a team by its within-division performance in each season. Football team success can be reflected in many outcomes, so we use several success proxy variables: team win-loss ratio, goal differential, and points scored. The win-loss ratio reflects the ratio of win to losses, ignoring any draws. Because some teams had undefeated seasons, we add one to both wins and losses when computing the win-loss ratio. We define long-term success using a novel Elo rating of CP football teams. Elo ratings are commonly used to rank teams in sports . The Elo rating system is a relative skill ranking based on game-by-game outcomes. In addition to the Elo rating, we also proxy long-term success by the team's probability of promotion, and probability of relegation over the sample period. For the probability of promotion and relegation we estimate a linear probability models in which the dependent variable is an indicator variable equal to 1 when a team was promoted or relegated at the end of the current season and equal to 0 when the team remained in the same division at the end of the season. Teams more likely to be promoted are more successful and team more likely to be relegated are less successful, relative to teams staying in the same division season after season.

8: COMPETITION | WW9: 10.30

Localization Economies and Firm Productivity: Evidence from Football Teams in Sao Paulo, Brazil | *Brad Humphreys & Amir Ferreira Neto*

In general, the results contain evidence that localization economies affect local football team success/productivity. The general pattern is that a higher concentration of local teams playing in the top two divisions (A1 and A2) reduces local team short-run success, holding the number of local teams playing in lower divisions constant, and a higher concentration of local teams playing in the lower two divisions (A3 and A4) increases local team short-run success, holding the number of local teams playing in higher divisions constant. This pattern may reflect the impact of local labor pooling and job matching, long identified as important sources of localization economies. Cities with many lower division teams and only a few upper division teams have a relatively large pool of developing players, coaches, and trainers that can be readily observed and evaluated, and the best ones can be hired away by the top teams. It could also reflect knowledge spill overs, to the extent that teams playing in lower divisions could experiment more with training practices or tactics and these innovations could be easily observed by the teams playing in the higher divisions.

A higher concentration of local teams playing in the top two divisions (A1 and A2) reduces local team long-run success, holding the number of local teams playing in lower divisions constant, and a higher concentration of local teams playing in the lower two divisions (A3 and A4) increases local team long-run success, holding the number of local teams playing in higher divisions constant. The mechanisms that link localization economies and local team short-run success also apply to long-run success by local football teams. With regard to urbanization externalities, median wage does not seem to explain team's long-term success when looking at the Elo, P(promote), P(relegate) outcome variables. Population has a positive and statistically significant effect on long term success for the Elo and P(relegate) in the Count model, and the probability of playing division A4 in all three models. Taken together, the results suggest that, as predicted by the model, urbanization externalities are important to explain both short-term and long-term success of teams. The evidence also supports the importance of localization effects, although the sign of this impact differs depending on the level of the local teams. This provides new insight into how agglomeration economies impact football team success. To interpret the results in a different context, consider the case of Madrid, Spain. Madrid is home to one of the most successful teams in Spain, Real Madrid, winner of 33 top division titles, 19 domestic knock-out competition championships, and 13 pan-European club championships. A second successful team, Athletico, also plays in Madrid. The standard explanation for the prolonged success of Real Madrid and Athletico would be that the teams play in a large, high income city that provides important urbanization externalities that make these teams more successful.

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Time	Day 2 | Thursday, 24 August 2023 | 11.30 - 13.00			
	9: ECONOMICS OF FOOTBALL | WW5 Chair: *Rob Simmons*	**10: PARTICIPATION | WW6** Chair: *Paul Downward*	**11: VOLUNTEERING & FUNDING |WW8** Chair: *Declan Jordan*	**12: PERFORMANCE 2 | WW9** Chair: *Bernd Frick*
11.30	The Hedgehog or the Fox: Versatility and Performance in Professional Soccer | *Jorge Tovar & Tomas Rodriguez*	Runner Beans to Couch Potatoes? Sport and Physical Activity in the UK Before and During the Pandemic - A Quasi-Natural Experiment | *Peter Dawson & Paul Downward*	The Sport Volunteering Irony: Correlates of Financial Compensation | *Elisa Herold, Pamela Wicker, Thomas Schwarzbauer & Martin Schnitzer*	What Hurts the Most? – The Indirect Costs of Injuries in Major Team Sports | *Sören Dallmeyer, Henry Steinfeldt & Christoph Breuer*
12.00	Does Gate Revenue Sharing Work? | *Rob Simmons & Ian Walker*	Participation in Women's Football in England: Facilitating its Development | *Paul Downward & Cristina Muniz*	Recruitment, Retention, and Succession in Volunteering in Irish Sports Organisations | *Declan Jordan, & Marie Ryan*	The Impact of Globalization and Innovations on Individual Performance: A Comparison of Female and Male Elite Marathon Runners | *Bernd Frick*
12.30	Generalist Versus Specialist Leaders: The Case of Association Football | *Benjamin Holmes, Ian McHale & Kaori Narita*	Estimating Involvement Effect and Recreational Benefit of Cyclists after COVID-19 Pandemic Infection in Taiwan | *Chin-Huang Huang*	Funding of Sports at the Level of Self-Governing Regions in Slovakia – the Creation of a Systematic Formula in a Non-Systematic Environment |Michal *Varmus, Milan Kubina, Martin Mičiak & Dominika Tumová*	Cash or Culture: Following the Vein of Olympic Gold | *Ross Booth, Michael Barta & Robert Brooks*

9: ECONOMICS OF FOOTBALL | WW5: 11.30

The Hedgehog or the Fox: Versatility and Performance in Professional Soccer | *Jorge Tovar & Tomas Rodriguez*

Versatility is the property of being able to perform different functions. The intuitive idea that more versatile firms should perform better in changing environments is quite appealing. Being or lacking versatility is often at the core of tales of success or failure throughout the business world. However, versatility is not necessarily an asset for two main reasons. First, the kind of excellence that can only stem from specialization typically comes at the cost of lower versatility. Second, from a game theoretic perspective, when strategic interaction involves any opportunities for cooperation, being more versatile -having a larger set of strategies available- might lead to lower equilibrium payoffs, even if such greater versatility were costless. Whether versatility pays off or not is therefore an empirical question that needs to be asked in each specific environment. Assessing a correlation between versatility and higher performance in real-world applications is difficult because one rarely has access to detailed data on firms' capabilities. This paper uses professional soccer, one of the most globalized industries, to test the correlation between versatility and performance. Soccer is an ideal setting to assess the relationship between versatility and performance because detailed information on behavior and objective performance are readily available. We propose and implement a general measure of observed versatility valid over a sufficiently long period of time, say an entire season. We assess the relationship between versatility and performance using data from two soccer leagues that differ in expected quality. The main estimates are drawn from the 2018-19 season of La Liga, the Spanish soccer league, a top-soccer leagues, and the 2018-1, 2018-2, and 2019-1 seasons of the Colombian league, which delivers champions once every semester. In soccer, as in any given business, the manager aims to allocate the resources under her command to achieve optimal performance while facing the challenges posed by the competition. In sum, she must choose her team's strategy. This paper defines the versatility of a team as the set of all strategies available to a manager. Concurrently, a strategy is a complete game plan; one that establishes responses to all contingencies that might arise in a game. Given the complexity of a soccer match, it is not computationally feasible to define the set of all strategies available to a team manager. We address the problem by positing that the number and variety of strategies available to a manager, the actual versatility of a team, is related to the set of different moves that the team players can perform. Indeed, in any given soccer game, groups of players of different sizes can cooperate among themselves to craft an instance of successful play. We can define a collection of players of any size that chain an uninterrupted series of passes at least once during a season as an effective sub-team. We define the observed versatility profile of a team as the number of effective sub-teams of all possible sizes (2-11) displayed over a sufficiently long period while facing different opponents.

Our testable hypothesis is that teams with dominant observable versatility profiles tend to perform better, i.e., those displaying the largest number of distinct effective sub-teams of different sizes. The hypothesis stems from the idea that the ability to rely on additional sub-teams of players (having the ability to pass the ball successfully) leads to more strategies, ultimately making defeating the opponent more plausible. It was César Luis Menotti, a former Argentine soccer coach, FIFA World Cup winner in 1978, and manager of FC Barcelona, among other achievements, who noted the importance of teams-within-teams to improve performance. Menotti, who denoted the concept as pequeñas sociedades, or ``small societies'', was thinking about two or three key players within a team who connected systematically with high enough quality to generate an advantage in their favor. Our hypothesis extends Menotti's views to study how access to more ``societies'' impacts performance. Access to a larger set of sub-teams might be essential, even at the cost of sacrificing the quality of some of them. We use an event-level dataset for all matches of the mentioned seasons of the Spanish and Colombian soccer leagues allowing us to identify the number of players participating in any passing sequence over the entire season. Namely, for each team, we count the number of distinct sub-teams of all possible sizes (2-11 players) interacting during the season and build a team's 10-dimensional observable versatility profile. We find that teams displaying more distinct sub-teams of size (4 and above) tend to perform better. We run 10 multinomial logistic regressions, one for each possible sub-team size (2,3,...,10,11) in order to relate the outcome of each team (win, draw or loss) in each match and the number of distinct sub-teams of that size. Since the observable versatility profiles are 10-dimensional vectors, it is challenging to relate them directly, in their entirety, to team performance. Furthermore, due to how correlated the numbers of distinct subsets of different sizes can be, including all 10 of them simultaneously in a single regression poses significant statistical issues. We address this problem by constructing a single index of observable versatility for each team, OV Index, using principal component analysis. We explore the relationship between the OV Index indices and team performance using a multinomial logistic regression based on match-level data. This approach empirically tests the hypothesis that observable versatility positively relates to performance.

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The results imply that as the size, n, of the sub-teams considered increases, the number of subteams of size n relates positively and statistically significant to the teams' performances. Notably, all coefficients involving the number of distinct sets of players of sizes 5 and up are positive and significant regarding the probability of winning. On the other hand, the coefficient involving the number of sub-teams of size 4 is not significant, while the coefficients for size 2 and size 3 are negative and statistically significant. The latter result reflects that in Spain, low-performance teams tend to display a relatively large number of small "easy-to-generate" sub-teams. In terms of odd ratios, all statistically significant coefficients but those for 11 players imply that increasing the number of sub-teams by one player will increase the chances of winning relative to losing by at least 2.4%. The figure is per match; thus, over the 38 games in a season, the results are non-negligible. For example, consider the impact of ten players' sub-teams. Given the three points for winning a game, the results imply that a team will earn additional 2.76 points over a season. Getafe and Sevilla, for instance, which finished 5th and 6th with two points less than Valencia, would have classified for the Champions League, the richest tournament in the world. A similar exercise for subteams with eight players delivers a 1.35 points gain over a season. Athletic de Bilbao, who finished with the same 53 points as Espanyol, would have classified for the Europa League, the second continental tournament. Therefore, the upward trend supports our hypothesis because for a large enough sub-team size, as the number of sub-teams grows, performance improves.

Regarding the probability of winning in the Colombian league, they are similar to those obtained for the Spanish league. However, the coefficients are positive and statistically significant for all models involving three players sub-teams and up. Our results suggest that in Colombia losing is marginally more impactful in a shorter than in a more extended tournament. In terms of odds ratios, the overall results for Colombia imply a slightly stronger result. For an eight-player sub-team, the estimated coefficients indicate an additional 1,86 points. Considering the regular season for the 2018-2 season, the results imply that Nacional would have classified at the expense of Santa Fe, which finished with 31 points, one more than the former. To sum up, the Colombian case supports the hypothesis that observable versatility relates to performance and suggests that losing is marginally costlier in this league than in La Liga. Consistent with our earlier findings, we find a positive partial correlation between the observable versatility index and the teams' performances. Overall, the evidence is consistent with our main hypothesis. Teams with a larger number of distinct large subsets of players ever observed to interact tend to perform better. A battery of robustness checks supports our main findings.

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Does Gate Revenue Sharing Work? | *Rob Simmons & Ian Walker*

In English football, there are two main competitions, the round robin League and the Football Association Cup (FA Cup) which is a knockout competition. The FA Cup has gate revenue sharing while the League competitions do not. We exploit the randomness of the FA Cup draw- both in terms of home advantage and selection of opponent to show how progress in the FA Cup can help raise the performances of lower division teams in the following season. The theoretical predictions of the impacts of gate revenue sharing on team performance vary according to the objectives of clubs. The impacts are ambiguous where clubs are profit maximisers, with theoretical results dependent on key assumptions such as elasticity of talent supply. Where clubs are maximising wins subject to a break even constraint the prediction is straightforward. Gate revenue sharing should enable smaller market teams to improve their league performances. Our setting is the English Football League which occupies Tiers 2 to 4 below the Premier League. We expect the win maximising objective to apply here. The FA Cup has gate revenue sharing with 45% of gate revenues for a given Cup match going to home and away team. Progress in the FA Cup generates extra revenues for the team but this progress will depend on i) the random draw of opponent and ii) whether the draw places a team at home so as to exploit home advantage. If a lower tier team faces a Premier League team in a Cup match then this is an opportunity for extra revenue generation for the club even if the Premier League team wins. The extra revenue can be used to hire and retain valued players so as to improve league position in the following season. There are two possible mechanisms by which League performance can improve following Cup success: i) a club uses extra revenue from progress in the Cup competition to increase its relative wage bill which then translates into improved League position ii) there is a 'momentum' effect where Cup success leads to an intangible increase in player and team effort through increased confidence in capability to win League games.

We have two data sets. The first covers 1992/93 to 2014/15 and includes relative wage bill as a control variable. This recognises the longstanding empirical result that higher relative wage bill is correlated with League ranking. The second data set excludes the relative wage bill but covers a longer period 1992/93 to 2018/19 just before the Covid pandemic led to grounds being closed to spectators. We estimate instrumental variables models where outcomes are: difference in League ranking between season following progress in the FA Cup and current season, probability of promotion this season, probability of top 6 or 7 position (hence qualification for playoff competition), probability of relegation. The first data set is a sample with inclusion determined by availability of relative wage bill data. The second data set is the population of all Football League clubs over the period. Our measure of Cup performance is cumulative attendance in the FA Cup competition across rounds reached. We predict that greater FA Cup attendances will lead to improved League performance in the following season. We have a 2 stage model. Our endogenous variable is total FA Cup attendance and this is determined by 3 instruments: total number of home games hosted in the Cup competition, net sum of differences in division between object team and its opponents in the Cup competition and the interaction between these 2 variables. Standard F test and Sargan overidentification give us confidence that we do not have a weak instrument problem and the instruments are valid. In the second stage, we regress team performance as defined above on predicted FA Cup attendance and relative wage bill. For the second data set we simply exclude relative wage bill and examine the partial effects of FA Cup attendance on team performance.

Below we report preliminary results for Tiers 3 and 4 combined. Clubs in these Tiers enter the FA Cup competition in Round 1 in November. They can only meet a Tier 1 (Premier League) or Tier 2 team in Round 3 in January. It is very rare for a Tier 3 or 4 team to progress beyond Round 5 in February. It is also very rare for a Tier 3 or 4 team to beat a Premier League team in the Cup ('Cup shock'). First, two of our three instruments has a significant coefficient in the first stage FA Cup attendance model. These are number of home Cup games and net sum of differences in divisions between object team and opponents. As expected, a higher value of net divisional difference (so a lower division team is playing teams of higher League status) generates greater Cup attendance compared to a Cup run where all teams are from same division. Note that these results do not hold for Tier 2 teams where the FA Cup variable has an insignificant coefficient.

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Does Gate Revenue Sharing Work? | *Rob Simmons & Ian Walker*

We argue this is because the primary motivation for Tier 2 teams is to gain promotion to the Premier League. The disparity in revenues between Premier League and Tier has been growing substantially over time. Therefore the FA Cup is seen as a secondary, even distracting, competition for many Tier 2 teams. In the second stage, we show that greater FA Cup attendance leads to a) increased improvement in League ranking next season b) higher probability of promotion this season c) higher probability of promotion next season d) greater probability of a playoff appearance this season e) greater probability of playoff appearance next season f) lower probability of relegation this season. Given validity of our instruments these are causal effects. To complete our empirical analysis we show significant effects of progress in the FA Cup competition on the following season's revenue. Again we use a 2 stage model. Revenues depend on League rank which in turn depends on FA Cup attendances and relative wage bill. However, although we can show that team revenues improve following a successful FA Cup performance we fail to obtain any significant effects of Cup performance on relative wage bill in the following season. his leads us to suggest that the primary impact of FA Cup success, and associated gate revenue sharing, on subsequent League performance is primarily through 'momentum' effects rather that increased relative wage bill.

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Generalist Versus Specialist Leaders: The Case of Association Football | ***Benjamin Holmes, Ian McHale & Kaori Narita***

It goes without saying that selecting the right leader is of great consequence in any form of organisation. Much effort has been devoted to discovering desired characteristics of leaders for organisational success. For instance, there is an ongoing debate on whether a leader should be a specialist or a generalist. Theories that prefer generalists over specialists posit that the great breadth of tasks associated with top management positions is better handled with diverse career experiences (Lazear, 2012). On the contrary, some argue that this multidimensional nature of managerial tasks favours specialist leaders since expert knowledge is required to understand firms' internal capabilities and allocate resources in the most effective manner (Li and Patel, 2019). Interestingly, whilst extant empirical studies find that generalist managers and executives are paid more than their specialist counterparts (Custódio et al., 2013; Frydman, 2019), their influence on firm performance is not supported by evidence. For instance, Li and Patel (2019) find a negative relationship between more generalist CEO experience and firm performance, and Custódio et al. (2013) do not find a statistically significant difference between generalist and specialist CEOs in terms of their influence on firm performance. The aim of this study is to further investigate the influence of generalist and specialist leaders on organisational success using data from professional football leagues around the world. The topic has been previously studied in the context of large corporations, where these studies focus on managers and executives such as CEOs. However, a football manager is one of the leadership positions that have been popularly investigated in economics and management literature due to its similarity to the role played by executives in more conventional firms (Hughes et al, 2010) and the high publicity that entails great data availability. In addition, we define the type of leaders (generalist/specialist) in a different way. For example, previous studies (Agnihotri and Bhattacharya, 2021; Li and Patel, 2019) classify leaders into generalists and specialists based on the number of different industries in which a leader has previously worked. With this definition, football managers would be "specialists" since their previous careers are typically exclusively related to the football industry. However, football managers are responsible for training different types of players with different roles, i.e. defence and offence. Good managers would enhance the ability of players regardless of their roles. Yet, some managers may equally excel at enhancing both types of players whilst others may be particularly better at improving the performance of a certain type of player. We, therefore, first classify managers into specialists and generalists based on their complementary effects on the performance of different types of players, using player-manager matched data. In particular, we classify a manager to be a "generalist" if he is equally good at improving both defensive and offensive players and a "specialist" if he is better at improving one type of player than the other. Given this, we estimate the impact of generalist and specialist managers on club performance in the event study of manager transitions.

Our empirical strategy follows two steps. First, we identify "generalist" and "specialist" managers by estimating individual managers' effects on the performance of each player. To do so, we employ player-manager matched data consisting of performance ratings of individual players who appeared in major domestic league competitions in 15 countries as well as international competitions, such as FIFA World Cup and UEFA Champions League. The data was collected from WhoScored.com and covers the time period between 2006 and 2022. We run a regression model which includes individual player rating as a target variable and estimate two random effects per manager (one for offensive players and another for defensive players) and individual player effects. Additionally, we include control variables such as competitions, home advantage, and the age of a player. The parameters in the regression model are estimated by means of Bayesian hierarchical modelling. The two random effects of individual managers capture their influence on the performance of defensive players and offensive players. Therefore, we classify a manager to be a "specialist" if these two effects are statistically different at a 10% significance level and a "generalist" otherwise. In the second step of the analysis, we estimate the impact of specialist and generalist managers on team performance in the event study of manager transitions. In particular, we analyse 169 cases of within-season managerial change, where both outgoing and incoming managers have at least 10 consecutive appearances. Out of these manager transitions, 40 cases resulted in the appointment of a specialist, and 129 cases resulted in the appointment of a generalist. To compare the possible difference in the influence of specialist and generalist managers, we consider post-transition matches following the appointment of a specialist manager to be treated observations and post-transition matches following the appointment of a generalist manager to be control observations. To measure team performance, we employ net expected goals (xG). The measure is based on the sum of the probabilities of a shot resulting in a goal relative to that of an opponent, which summarises the relative quality of scoring chances created. As shown by Flepp and Franck (2021), this measure of performance better reflects true performance on the pitch than overall match outcomes since it is less susceptible to the randomness of match outcomes.

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Then, to estimate the "treatment" effect of appointing a specialist manager as opposed to a generalist manager, we conduct a synthetic difference-in-differences (SDID) analysis, using the rolling average of xG before and after an appointment of a new manager. The method, proposed by Arkhangelsky et al. (2021), allows for additive units- and time-specific fixed effects (like the conventional difference in difference) whilst reweighting control units to match with the pre-treatment trends of the treated units (like a synthetic control method).

First, our preliminary analysis of 1,639 managers matched with 20,048 players during our sample period identified 204 individuals who are classified as a specialist based on our definition of specialist and generalist managers. This implies that, in general, a manager's influence on individual players is consistent, whatever the role of the player is. Josep Guardiola (English Premier League, German Bundesliga) made a statistically significant and positive influence on both types of players with a slightly larger effect on offensive players. However, the difference between the impact on the two types of players is not statistically significant at a 10% significance level. Another example of a generalist manager is Thomas Tuchel (English Premier League, German Bundesliga and French Ligue 1), whose impacts are similar for both offensive and defensive players. We also identify some managers who make a more favourable impact on one type of player than the other. For example, Jose Mourinho (English Premier League, Italian Serie A) and Rafael Benitez (Italian Serie A, Spanish La Liga, English Premier League) both contributed to the performance of defensive players more significantly than they contributed to the performance of offensive players. In fact, their individual influence on offensive players is positive but not statistically significant at a 10% significance level. The individual effects of Gian Piero Gasperini (Italian Serie A) were positive and statistically significant for both types of players, whilst his influence was even statistically larger on offensive players. Second, we analyse the outcome of manager transitions when a new manager is a specialist as opposed to a generalist, measuring pre- and post-transition club performance with the rolling average of xG. The preliminary analysis focuses on the 169 cases of within-season managerial changes observed in the top-tier domestic leagues from five European countries, which includes 400 treated units and 2980 control units. The performance of clubs which appoint a specialist manager declines leading up to the transition, followed by improvement in performance in the post-transition period. The SDID analysis suggests that the control group with clubs which appoint a generalist as a new manager also see improvement in performance following a manager transition. Whilst clubs with a specialist manager improves club performance slightly more than those with a generalist manager, the difference is not statistically significant at the 5% significance level. These preliminary findings suggest that being a generalist or specialist does not determine the quality of leaders in the context of professional football.

10: PARTICIPATION | WW6: 11.30

Runner Beans to Couch Potatoes? Sport and Physical Activity in the UK Before and During the Pandemic - A Quasi-Natural Experiment | *Peter Dawson & Paul Downward*

Physical activity is an important component of a healthy lifestyle. Regular physical activity can reduce the risk of chronic and bone diseases, boost mental health, and enhance quality of life. According to World Health Organisation (WHO) the economic burden of physical activity is estimated to cost US$300 billion by 2030 if governments do not take action to encourage more physical activity among their populations (WHO, 2022). It is well established that COVID-19 had a negative impact on physical activity levels in the UK and elsewhere (Stockwell et al., 2021; Christensen et al., 2022). UK Chief Medical Officers' Physical Activity Guidelines (2019) state that adults should aim for at least 150 minutes of moderate intensity activity each week or, equivalently, 75 minutes of vigorous activity to be classified as "physically active". Prior to the pandemic, around 62-63% of the adult population in England were classified as being physically active. During the pandemic, this fell by more than 2% points with those classified as physically inactive increasing by 2.6% points - equivalent to 1.3 million more inactive adults (Active Lives Survey, 2022). There is an established literature on the determinants of sports participation and physical activity (Humphreys and Ruseski, 2011; Downward et al., 2014). Much of this literature suggests that physical activity declines with age and is lower for ethnic minority backgrounds and women are generally less physically active compared to their male counterparts (Saffer et al., 2013). Much less is known about the precise interplay between moderate and vigorous activity. Whilst it seems likely that younger people are more likely to engage with vigorous activity compared to older people, the extent to which behaviour change is affected by the business cycle and economic shocks has been under-researched. Previous work has suggested that when wages are high and time is costly, individuals typically switch from less intensive (moderate intensity) to more physically intensive (vigorous) activities (Meltzer and Jena, 2010; Maruyama and Yin, 2012). Other studies have demonstrated that exercise may be influenced by job loss (Colman and Dave, 2013, 2017). The most significant, and most recent, economic shock has been the Covid-19 pandemic. As noted above, the pandemic did have a negative impact on physical activity levels. However, by using a longitudinal framework and exploiting the random nature of the timing of interviews we can identify the causal effect of the pandemic not only on overall physical activity levels but also differences between moderate and vigorous activity levels.

This study uses individual responses from the Understanding Society Survey (also known as the UKHLS) covering wave 9 (fieldwork: 2017-2019) and wave 11 (fieldwork: 2019-2021). These waves were chosen as they included questions related to physical activity as well as allowing for the construction of the quasi-natural experiment design as discussed below. Individuals are asked the following in relation to physical activity: "I am going to ask you about the time you spent being physically active in the last 7 days…Think about the activities you do at work, as part of your house and gardening, to get from place to place, and in your spare time for recreation, exercise or sport". Individuals are asked to think about the vigorous activities they have done in the last 7 days – how many days did they do vigorous activity and how much time they usually spend doing vigorous activity on one of those days. They are then asked the corresponding questions in relation to moderate activities. For the analysis undertaken in this study the estimated total weekly minutes of vigorous (and separately moderate) activity is constructed by multiplying the minutes of activity by the number of days. As a robustness check we also look at the number of days on vigorous and moderate activity. We also look at constructions that combine vigorous and moderate together, including vigorous activity as a proportion of total activity and vigorous activity as a proportion of moderate activity. The quasi-natural experiment design used in this study is constructed in a manner similar to Metcalfe et al. (2011) and Powdthavee et al. (2019). These studies use the 9/11 terrorist attacks and the UK Brexit result respectively as exogenous shocks on well-being. Like these studies we argue that the first UK lockdown (23 March 2020) also acts as an exogenous shock to the randomised sampled population (since the date of the interview is randomly assigned). Our analysis separates individuals into two groups. The first group - the pre-lockdown (control) group - consists of individuals who were surveyed in wave 11 before 23rd March 2020. The second group – post lockdown (treatment) group – consists of individuals who were surveyed in wave 11 on or after the 23 March 2020. The two groups are then tracked back to the wave 9 survey. We use a difference-in-differences (D-i-D) model.

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Our baseline estimates of equation [1] using the estimated minutes of activity suggest that the Covid-19 pandemic had a negative and statistically significant effect on moderate activity. The average treatment effect is a reduction of approximately 24.5 minutes of moderate activity each week. Whilst the corresponding effect is also negative for vigorous activity the magnitude is much smaller (implying a reduction of just 7 minutes, on average) and not statistically significant. These results suggest individuals undertaking vigorous activity were better able to maintain activity levels despite the restrictions in place. A series of robustness checks were undertaken. Replacing the estimated minutes of activity with days of activity reveals an statistically significant increase in vigorous activity but no effect for moderate activity. However, no evidence is found to suggest any increase in vigorous activity as a proportion of total activity or vigorous activity as proportion of moderate activity. Some differences are observed across different age groups. Those aged less than 40 see the largest fall in moderate activity whereas no statistically significant effect is observed for those aged 65 and over. As with the results for the full sample, no statistically significant change is observed for estimated total minutes of vigorous activity levels but there is an increase in the number of days of vigorous activity with the magnitude for those aged less than 40 nearly double compared to those in the 40-64 age group. Similar falls in moderate activity were observed for males and females, although males were marginally more likely to increase their days of vigorous activity compared to females. In the case of ethnic groups, black and minority ethnic groups no change in either moderate or vigorous activity was identified. Our findings suggest that Covid-19 did have a negative impact on levels of physical activity, especially in relation to moderate activity as well as some evidence to suggest that vigorous activity was less affected. There is little evidence to suggest significant switching from moderate to vigorous activity (or vice versa). Overall, the results have important policy implications as we move into the post pandemic period.

10: PARTICIPATION | WW6: 12.00

Participation in Women's Football in England: Facilitating its Development | *Paul Downward & Cristina Muniz*

It is recognised that encouraging sport participation can play an important role in social and welfare policy in the UK because of the desirable outcomes it delivers (Lechner and Downward, 2017). These outcomes, identified in central government strategy, include health, wellbeing, personal and social development and economic development (Cabinet Office, 2015). In England the recent value of these impacts has been estimated to lie between £45 billion and £85 billion (Davies et al., 2019; Sport England, 2020). These positive impacts are also reflected in current sport policy agencies' strategy objectives (Sport England, 2021). One key feature of current policy concern has been the persistence of inequality in sport participation and the need to rectify this where it results from disability and health, socio-economic status, ethnicity and gender and their intersection (House of Lords, 2021; Sport England, 2021). In particular it is widely accepted that women participate far less in sport generally than men (Downward and Muniz, 2019) and it has long been argued for a need for greater gender equality in sport (Hartmann-Tews and Pfister, 2003). Women's football has been identified as a potential vehicle for addressing this inequality in the UK. These aspirations have been brought into sharp focus since the decision for England to host, and now reflect upon the success of the England Women's football team at, the women's EURO 22 championship. As well as the latter ending the lack of international footballing success in the British isles, notably and historically linked to the men's game, the tournament has been identified to be a success in breaking attendance, broadcast and social-media engagement records, reflecting prior forecasts of potential (Ernst & Young LLP, 2022). Moreover it is claimed that considerable opportunity to play, coach, officiate and volunteer has been developed (UEFA, 2022). However, there is no detailed empirical investigation of the socio-economic and facility provision correlates of women's participation. A better understanding of these correlates is needed to understand the challenges faced in planning for the sports' development.

The theoretical approach adopted in the research is captured in a socio-ecological framework in which individual level characteristics and facility provision are explored as determinants of football participation. The individual characteristics that can be linked to football participation reflect the time allocation framework of Becker (1965, 1974) in which the socio-economic characteristics of individuals are likely to be highly correlated with their participation in sport reflecting time allocation (Downward and Muniz, 2019), family and socio-demographic (Ruseski et al., 2011; Hallmann and Breuer, 2014) and gender constraints (Wicker and Frick, 2016). Facility provision is also important, however, in representing supply side opportunities. The availability of infrastructure has been identified to be important for sport internationally (Hallmann et al., 2012; Wicker, Hallmann and Breuer, 2013; Hoekman et al., 2016; Eime et al., 2017).

The research draws on the Active Lives Survey (ALS) covering 2018-2019 (n=156,246; n=88,142 women and n=68,104 men) which records individual participation in football in England. A binary dependent variable is identified for both men and women indicating if they have participated in football or not in the last 12 months. A large set of confounding variables are included that measure age, socio-economic status, disability, ethnicity, family status, location. This data is linked to available information on the number of footballing facilities in the local authorities of the individuals (n=307). Multi-level logit regression analyses are undertaken.

The results highlight important differences between the correlates of women's and men's participation in football. Whilst ageing has a general negative association with participation, having higher education levels has a negative association with women's participation. Being in a couple has a negative association with participation for women, but no association for men. The number of facilities is associated positively with men's participation but not women's participation. These unique findings provide insight into the challenges faced in developing women's participation in football because they reveal socio-economic and facility barriers to participation.

10: PARTICIPATION | WW6: 12.30

Estimating Involvement Effect and Recreational Benefit of Cyclists after COVID-19 Pandemic Infection in Taiwan | ***Chin-Huang Huang***

The COVID-19 pandemic has had a significant impact on people's lives all over the world, particularly in the areas of tourism and physical activity. Previous research has examined the relationship between COVID-19, motivation, involvement, and behavior intention. In previous study of Yu, Lin, Wang, and Huang (2022), it was found that COVID-19 had a positive and significant effect on motivation and involvement. Motivation was found to have a positive and significant effect on involvement, and involvement was found to affect behavior intention. The main finding was that while motivation did not directly affect behavior, involvement did mediate between motivation and behavior among cyclists during the pandemic. Involvement represents the perceived importance of engaging in an activity based on inherent motives, needs, and interests. Sports involvement is relevant for reducing perceived constraints and increasing motivation towards participation. However, the mediation effect did not discuss how involvement affects the behavior of cyclists after the pandemic. Based on involvement, cyclists may increase or decrease their intention to ride. Does the mediation effect affect the recreation benefits of cyclists? This study aims to estimate the monetary value of the involvement effect and recreation benefits of cyclists in Taiwan. Since Taiwan's bicycle industry is world-renowned, and cycling is the country's second most popular form of exercise, it is important to understand the involvement of Taiwanese cyclists in order to help the government adopt appropriate policies post-COVID-19 pandemic. Prior to the pandemic, in 2017, there were 5.1 million cyclists in Taiwan.

The Travel Cost Method (TCM) and Contingent Valuation Method (CVM) are commonly used in non-market goods research. TCM estimates the use value using a revealed preference approach, while CVM measures non-use values using a stated preference approach. In TCM, the survey collects data on visitors' expenditures for round trips to estimate the consumer surplus of the demand function for biking. CVM is used as a hypothetical market to evaluate consumers' willingness to pay. Since TCM does not rely on hypothetical statements, it may provide a more reliable estimation. Based on conservative estimates, this study uses TCM to evaluate the recreation benefit. TCM is based on the demand rule of economic theory, where the number of trips a participant takes is a proxy for demand quantity and the travel cost is a proxy for price. The own price includes transportation fees, on-site expenditure, and the opportunity cost of time. Both the transportation fee and substitute travel cost count the round trip from home to the destination site. The travel time spent at the destination site is counted as one-third of the wage rate, including the opportunity time cost. The empirical model used a Poisson model to estimate the consumer surplus of individuals who participated in bike tourism. A random effect Poisson model was employed to take into account the heterogeneity among individuals. Consumer surplus was calculated by dividing the average number of trips by the coefficient of the own price variable in the demand model.

The survey data in this study were obtained from the research of Yu, Lin, Wang, and Huang (2022), which was conducted on the Survey Cake platform from April to May 2022. The study focused on cyclists who had experienced bicycle tourism, and the master list of participants was provided by a travel agency in Taichung City. A total of 437 cyclists filled out the questionnaire, and 401 of them completed it. The male respondents numbered 200, while the female respondents numbered 201. The largest age group in the survey was the 21–30-year-old group, which consisted of 186 cyclists. If the COVID-19 epidemic persists, 235 respondents (58.6%) indicated that they would have a decreased intention to engage in bike tourism. This study used exploratory factor analysis to extract the major dimensions of involvement for cyclists. Factor analysis was conducted using the principal component method and the Varimax rotation procedure. The 15 involvement items extracted two factors: 'attraction and identity' and 'centrality and social'. In the first empirical model, the independent variables of the basic Poisson model included travel cost, substitute travel cost, age, income, and vaccine. The second Poisson model added two involvement factors to the basic model to examine the effect of involvement. The goodness-of-fit of the evaluation models was measured significantly by the Chi-squared measure. The signs of cost and substitute cost variables were consistent with the demand rule for both models and differed significantly from 0. The age variable was significant in the basic model but insignificant in the second model. The income and vaccine variables were significant for both models. The vaccine number was negative to trips, which means that the more vaccine times a person has, the less likely they are to ride for tourism. The two involvement variables were positive and significant in the second model. The consumer surplus was calculated by dividing the mean of respondent trips (4.64) by the coefficient of travel cost. The consumer surplus was NT$5,058 in the basic model and NT$3,943 in the second model. The partial effect of involvement decreased the recreational benefits during the COVID-19 epidemic, which is consistent with the survey results indicating that 58.6% of respondents would decrease their intention to engage in bike tourism during the pandemic. Moreover, the more vaccine times a person has, the less likely they are to engage in bike tourism. In other words, the mediation effect of involvement for cyclists is to consider more risks during the COVID-19 epidemic, which decreased their recreational benefits.

11: VOLUNTEERING & FUNDING | WW8: 11.30

The Sport Volunteering Irony: Correlates of Financial Compensation | ***Elisa Herold, Pamela Wicker, Thomas Schwarzbauer & Martin Schnitzer***

Since community sports clubs and sport events rely heavily on volunteers in their operations, many studies attempted to understand the determinants of volunteering and especially individuals' motivation to volunteer (Wicker, 2017). The outcomes of volunteering, especially monetary rewards, have attracted less research. One reason for this neglect might be that some definitions of volunteering have ruled them out, considering volunteering as "work performed without monetary recompense" (Freeman, 1997, p. S140). Wilson (2000) stated that giving free time for others' benefits should not "preclude volunteers from benefiting from their work. Whether these benefits can include material rewards is open to debate" (p. 216). However, such a debate is largely lacking in the academic literature, even though remuneration of volunteers was found to negatively impact people's perception of volunteers (Handy et al., 2000). Moreover, financial compensations beyond mere reimbursements of costs can be problematic from a taxation perspective (Morris, 1999; Restall, 2005). Therefore, it is important to understand the financial compensation volunteers receive. Consequently, the purpose of this study is to examine financial compensation and its correlates among volunteers in non-profit sports clubs. Only a few studies have provided indications of sports volunteers' financial compensation. For example, German football referees receive a financial compensation of between €17 and €60 per game, depending on the division (Wicker & Frick, 2016). Breuer et al. (2021) found that football referees receive an annual expense allowance of €1,490, which is equivalent to €36 per game. Within German non-profit sports clubs, board members received an annual expense allowance (i.e., financial compensation) of €310 on average, with those receiving an allowance getting €1,584 (Breuer & Feiler, 2020a). The board roles of youth director (M=€844) and sports director (M=€803) received the highest average compensation, while treasurers (M=€132) and secretaries (M=€156) obtained the lowest. Expense allowances were highest among board members aged 41-60 years (M=€2,190) and lowest among 15-to-18-year-olds (M=€160). Receiving training for the volunteering activity and volunteering in a larger club was associated with higher expense allowance (Breuer & Feiler, 2020a). A similar analysis of voluntary coaches in sports clubs revealed an annual expense allowance of €884 (those who received a payment), reflecting a mean value of €7.20 per coaching hour. The results of a regression analysis showed that having a license for mass or competitive sports, number of training groups, and educational level are positively associated with the level of expense allowance, while coaching children has a negative association. Age has an inverse u-shaped effect, with coaches aged between 41-60 years generating the highest compensation (Breuer & Feiler, 2020b). Collectively, the literature review shows that only a handful of studies provide empirical evidence of sport volunteers' financial compensation, with even fewer studies examining correlates of compensation. Previous research has examined financial compensation from the perspective of sport organizations or specific voluntary roles, disregarding the possibility that some volunteers can have multiple roles and compensation streams. Given these shortcomings, a nuanced and analytical look from the perspective of individual volunteers is necessary.

The research context is non-profit sports clubs in Austria where non-profit sports clubs also rely heavily on volunteers to ensure their operations (SportsEcon Austria, 2021). Volunteers in sport clubs can receive a so called 'blanket travel expense allowance', which is the Austrian equivalent to the German expense allowance, reflecting the possible financial compensation of volunteers that is not subject to taxation. This expense allowance was €540/month until December 2022 and increased to €720/month in January 2023. It is this substantially higher than the German expense allowance for volunteers of €840/year and for voluntary coaches of €3,000/year. The data were collected in the context of a project called "Fit for the future - an ASVÖ program for club development" of the Austrian General Sports Association (ASVÖ) using an online survey. In total, 179 clubs participated in this project and invited their club members to answer to the survey. Until the beginning of 2023, 170 clubs delivered data from their club members, indicating that 24% of all invited club members filled out the questionnaire. Data were collected in rolling waves (club after club) between February 2018 and February 2023. Sport clubs from all Austrian states participated. For reaching out to club members, the clubs' own mailing lists as well as direct mailings, social media postings, or newsletters were used. Also, opportunities to directly fill out the questionnaire in the club house were created at some places. Altogether, n=4,574 members filled in the questionnaire. The questionnaire included questions about respondents' sociodemographics, club membership and programs, and volunteering. The questions were based on previous sport club research (Breuer, 2007, 2009, 2011, 2013; Breuer & Feiler, 2015, 2017; Schlesinger & Nagel, 2013). After data cleaning and recoding, two sub-samples were created for the analyses. The first sub-sample (n=2,057) solely consists of individuals volunteering actively in the club in any form (volunteer sub-sample). A logit regression model is used to analyze which predictors significantly influence the dependent dummy variable 'financial compensation' (0=receiving no financial compensation; 1=receiving a financial compensation). The second sub-sample (n=238) is comprised of those volunteers who receive a financial compensation >€0. A log-linear model is employed to estimate the correlates of the logged dependent variable 'amount of financial compensation'. The independent variables include age, gender, family status, kids, migration background, being employed, income level, being active in sports, being active in competitive sports, membership duration, club satisfaction, volunteering section, motives to volunteer, evaluation of volunteering, club aims, and survey year.

11: VOLUNTEERING & FUNDING | WW8: 11.30

The Sport Volunteering Irony: Correlates of Financial Compensation | ***Elisa Herold, Pamela Wicker, Thomas Schwarzbauer & Martin Schnitzer***

The descriptive results of the volunteer sub-sample reveal a mean age of 42.82 years (SD=16.66). In total, 65.1 % men and 32.7% women answered the survey. Most individuals were married (52.30%), had on average 1.50 kids (SD=2.55) and no migration background (92.00%). Furthermore, 47.4% of volunteers were active in competitive sports and on average already 28.50 years (SD=17.56) members of their sports club. The four most named sports were soccer (9.40%), gymnastics (6.20%), ski and winter sports (5.30%), as well as tennis (4.20%). The average annual membership fee amounted to 89.34 (SD=103.22). Only 5.60% indicated to be professionally employed in their club (in addition to volunteering). Satisfaction with the club was 3.97 (SD=1.10) and with voluntary work was 3.94 (SD=1.03) on a five-point scale. The majority of volunteers (56.6%) stated to volunteer occasionally in an operational role in the context of events, trips, and other smaller club happenings. Around 40.0% indicated to volunteer in an administrative role (e.g., board, administration), followed by a sport-related role (38.6%; e.g., coach, referee) and a technical role (20.00%; e.g., maintenance, clubhouse). The number of volunteering hours per month ranges from 1 to 150 (M=10.02, SD=6.21). Only 7.5% of volunteers indicated to receive a financial compensation for their work. For those volunteers receiving a financial compensation >€0, the values range from €10 to 6.480 per year (M=475.90; SD=1203.63). In the logit model, nine variables show a significant association with the outcome financial compensation. Starting with the socio-demographics, the model reveals a significant negative effect for age, indicating that younger people are more likely to receive a financial compensation for their voluntary work. Furthermore, taking part in competitive sports shows as well a significant negative association, whereas being satisfied with the club is significantly positively related. This finding indicates that pursuing sport competitions reduces the likelihood of receiving a financial compensation, while club satisfaction increases it. Concerning different voluntary roles, volunteers in sport-related roles are significantly more likely to receive a financial compensation: Volunteering as a coach, referee or other official increases the chance to receive a financial compensation from the club. Furthermore, four motives to volunteer and one volunteering evaluation aspect were significant correlates in the model. Turning to the log-linear model with the outcome amount of financial compensation, seven variables show a significant association. Moreover, being physically active in the club shows a significant negative effect, meaning that non-sport participants received a higher financial compensation. Furthermore, two motives, namely volunteering to gain social standing and supporting the club aim of engaging in health-oriented sports, have a significant positive association with the amount of financial compensation. The four survey year dummies (reference category: 2023) have a significant negative influence on the outcome, which can be traced back to the increase of the Austrian expense allowance in early 2023.

11: VOLUNTEERING & FUNDING | WW8: 12.00

Recruitment, Retention, and Succession in Volunteering in Irish Sports Organisations | *Declan Jordan & Marie Ryan*

This study examines the degree to which Irish sports organizations plan for the recruitment, retention, and succession of volunteers. The analysis is based on data from two original surveys of volunteers and club managers in Irish sports clubs and organizations. The importance of volunteers for the management of sports and physical activity is asserted in academic literature and reports on sports policy. Organizations and clubs must develop and put into action plans for the recruitment of new volunteers, retention of current volunteers, and succession or role transition for volunteers if they want to ensure the sustainability of sports volunteering, particularly as societies recover from the COVID pandemic.

Two original surveys are used in the paper. The first is a survey of sports volunteers (352 responses) from 31 different sports on the island of Ireland. This survey investigates volunteer motivation, volunteer experiences during the COVID pandemic, and volunteer experiences with clubs' succession planning. The second survey (216 responses) asked club administrators about their experiences with volunteer recruiting and the extent to which their organizations have policies and procedures pertaining to volunteer positions.

The study reveals that volunteers are typically happy with their clubs' efforts to identify and develop volunteers. The most challenging aspect of managing volunteer activity, according to volunteers and club administrators, is volunteer succession. Findings reveal there may be time constraints on volunteers' capacity to stay involved given that the majority name their prior playing participation, their children's involvement, and helping the sport they love as their primary motivations for volunteering. Recommendations indicate sustainable sports volunteering requires more attention from clubs and organisations on the succession of volunteers and providing scope for volunteers to assume more senior roles.

11: VOLUNTEERING & FUNDING | WW8: 12.30

Funding of Sports at the Level of Self-Governing Regions in Slovakia – the Creation of a Systematic Formula in a Non-Systematic Environment |Michal *Varmus, Milan Kubina, Martin Mičiak & Dominika Tumová*

Every stakeholder in the field of sports has their own expectations that grow with the more significant success anticipated. However, for this success to be possible, it is necessary for sports within all the components to be sufficiently funded and financially stabilized. Secondarily, the influence of various other factors is also important. These include corruption, volunteering, participation of the population in sports, and many others, purposefully connected to sports. The study Connection between State Funding and International Sporting Success: The Case of Croatia (2022) clearly divides these above-listed needs (or conditions) into three levels: the macrolevel, the meso-level, and the microlevel. Although the factors at all three levels are interconnected, most of the factors at the macro and micro levels cannot be influenced or changed. On the other hand, factors at the meso-level, such as the amount and the effectiveness of public funding of elite sports, can be changed because they are embedded in sports policies. However, most research deals with macro- and micro-level factors, and only a few studies examine the meso-level factors. The authors of the study believe that this is mainly because countries differ in the way they organize and fund their sports systems, which complicates the collection and analysis of data usable for comparisons. The aim of the presented research was to analyse the system of sports funding by regional cities and higher territorial units (self-governing regions) in Slovakia and, based on the results, to propose a universal and objective formula for funding sports by self-governing regions. As part of the research, data on the spending of financial resources on sports was collected and analysed in eight higher territorial units and in eight regional cities in Slovakia for the period from 2015 to 2019. Mainly the methods of document analysis, interviews, synthesis, and modelling were applied.

From the perspective of the overall funding of sports from public resources in Slovakia, the largest amount of funds has been allocated from the budgets of cities and municipalities for a long time. Since 2015, it has also been the only budget chapter that constantly increases the amount of funds directly allocated to sports and recreational activities. In total, municipalities and higher territorial units allocated 573.57 million euros to sports and recreational activities in the period from 2015 to 2019, which represents up to 57.75% of all public resources allocated to sports and recreation. Based on the findings, it can be concluded that the funding of sports from public resources can generally be characterized as continuously progressive, which means that it is constantly increasing. A minor exception was the year of 2018 when the total funds decreased by less than three million euros. However, it can be stated that the funding of sports managed to rise to the value of 256.11 million euros within five years, which is a shift of almost 110 million euros when compared to the value from 2015 (147.02 million euros). On the other hand, funding at the level of municipalities is unsystematic, including great differences within Slovakia. The proposed formula consists of basic parameters, namely the popularity of the selected sport in the city, self-governing region, the popularity of the selected sport in Slovakia, the achievements within the selected sport, and the membership base within this sport. Its pilot testing and recalculation have not yet been completed, but the first results indicate that it is a progressive and universal solution that would bring more transparency to the process of funding sports at the local-government level in Slovakia.

12: PERFORMANCE 2| WW9: 11.30

What Hurts the Most? – The Indirect Costs of Injuries in Major Team Sports | ***Sören Dallmeyer, Henry Steinfeldt & Christoph Breuer***

Across professional sports, teams are investing a large amount of resources in the prevention of injuries. In order to allocate resources efficiently, an economic evaluation of these prevention efforts is needed (Fuller, 2019). Therefore, the estimation of the total costs of sports injuries represents a core element. Total injury costs usually include direct as well as indirect costs. Direct costs often describe the medical costs of injuries. Indirect costs consider that injuries can often cause long absences of players (e.g., Walden et al., 2005) and as a consequence, injuries can have a considerable impact on the sporting success of a team (Williams et al., 2016). With teams receiving money for winning the championship, qualifying for international competition, or playing in a higher division, a reduction in sporting success-related revenues due to injuries can thus be regarded as indirect costs of injuries. Earlier research has tapped into the field of costs of injuries. . Most closely related to this study is earlier research that has estimated the costs of injury for soccer. These studies analyzed the decrease in performance due to increased injury burden (Hägglund et al., 2013) and then assigned a monetary value to the decreased performance (Eliakim et al., 2020). However, this earlier research has focused almost exclusively on soccer. The purpose of this study is to estimate the indirect costs of injuries in the professional team sports soccer, basketball, hockey and handball. This study sheds new light on the cost of injuries by considering multiple popular professional team sports that have previously been neglected by the literature in addition to soccer. Valuable insights can be gained as the different sports differ in terms of structures, number of teams, and varying total revenues. The concept that a team's injury burden can have a significant impact on the team's sporting success and, in turn, their revenue, has been a relatively new idea in the sports economics literature. Drawer and Fuller (2002) were the first to develop a theoretical model for the relationship between injury burden and sporting success. Their model and results show that an increased injury burden is associated with decreased sporting success. Over the past years, scholars have started to analyze and estimate the impact of decreased sporting success on the team's revenues. In the earliest related research, which is also most closely related to this study, Eliakim et al. (2020) estimated the impact of injuries on team performance in the English Premier League. They estimated that teams lose £45.000.000 due to injury each year. Most recently, Lu et al. (2021) studied Australian soccer and estimated injury costs between the years 2012 to 2017. This study contributes to the literature by taking the approach of Eliakim et al. (2020), refining it, and applying it to different sports. Thereby, it sheds light on the relationship between injury time and team revenues. In addition, this study considers the main sources of performance-related income for professional sports teams, which allows for a more accurate calculation of the indirect costs of injuries.

The data for this study covers the respective first and second divisions of basketball, handball, hockey, and soccer in Germany for the seasons 2014/15 to 2020/21. The injury data of this study was provided by the VGB, a large insurance company in Germany. The data consists of different injury measures on the team-season-level. Team-level data regarding league rankings, points and the number of players joining and leaving the team each season were scraped in R and merged with the injury data. Information regarding financial values that are related to the sporting success of teams, was gathered from online available documents. The study focuses on TV revenues for national and international competitions, game day gate revenues for national regular season and postseason games (only for basketball and handball) and international games, as well as bonuses for national and international competitions. The analysis is done in two stages. In the first stage, the impact of injury time on sporting success is estimated via OLS. The independent variable of interest is the respective injury measure. In the analysis, we employ different measures for the injury burden, such as the relative injury burden, the total number of days missed, and the number of individual and total injured players. The control variables include the team's division, year, sport, and number of players joining and leaving the team each season. The dependent variable is the difference in the final league ranking or points with the previous season's league ranking or points. In the second stage, the change in sporting success due to injury is related to the team's change in sporting success-related revenues. For example, it is analyzed how much money a team in the first division basketball loses, if it misses the playoffs due to injuries. To this end, the main sources of sporting-success-related income for professional sports teams are gathered. Special focus lies on the final league rankings, where one lower rank results in a significant drop in revenues.

Preliminary findings show a clear positive relationship between the respective injury measure and lost points/ranking. For example, 2.66 additional injured players on a team lead to 1 additional point lost, whereas an increased Relative Injury Burden of 25.62 means that the team will lose 1 rank in the final standings. The effect size varies between the sports. The biggest effect sizes can be observed in soccer, whereas the lowest effect sizes appear to appear in basketball. In terms of the monetary impact, the effects are also biggest in first division soccer with an average monetary loss of about 7.8€ mio. The smallest losses occur in basketball, where the loss of one rank costs the team on average about 140.000€.

12: PERFORMANCE 2| WW9: 12.00

The Impact of Globalization and Innovations on Individual Performance: A Comparison of Female and Male Elite Marathon Runners | *Bernd Frick*

Women have started to run marathons much later than men (they were not allowed to enter this type of race before 1973). In the early years, virtually all top female runners came from the US, Europe and Japan. Since the mid1980s, the percentage of runners from East African countries (mostly Kenya and Ethiopia) has increased rapidly due to "globalization". Thus, the increase in the performance of elite female runners is mostly due to the arrival of new runners, that is an intensification of competition (Nickell 1996). On the other hand, male and female athletes benefit equally from different types of innovations (technical, medical, dieting, rehabilitation). Thus, while the improvement in the performance of male runners is almost exclusively due to various innovations, the increase in the performance of women is due to both, innovations and an increasing pool of athletes. This increase in the pool of talents, in turn, is mostly due to the availability of equal amounts of prize money for men and women, making investments in a risky career equally attractive for male and female talent.

Based on a model developed by Barzel (1972) and refined by Munasinghe et al. (2001), I use the top 200 performances of elite male and female marathon runners in each year from 1973 thru 2022 (n=50 years with 20,000 runner-year-observations) to distinguish the effects of innovations on the one hand and globalization on the other hand.

The results suggest that the impact of globalization on the performance of female runners is about five times as large as the impact of medical and technological innovations (which are equally beneficial to men and women). However, excluding the first ten years of the observation period (1973-1982), it appears that the annual improvement of elite female runners is nearly identical with the annual improvement of male runners, suggesting that the impact of globalization on elite runners' performance is short-lived. Once the pool of elite female runners is as large as the respective pool among men, the annual change in average performance is driven by the same factors that shape the development among men.

12: PERFORMANCE 2| WW9: 12.30

Cash or Culture: Following the Vein of Olympic Gold | ***Ross Booth, Michael Barta & Robert Brooks***

This paper examines variations in Medal Tallies at the Summer Olympic Games between top medal earning countries. Using summary statistics and fixed-effects regression analysis, results suggest that country specific Discipline fixed-effects are the main determinants of medal outcomes. It was found that medal event participation had more explanatory power in determining medal outcomes at a given Games than team size. Furthermore, medal event participation could be a measurable source of the host country effect. It is concluded that the structure of a country's national Olympic body can have significant effects on medal outcomes. Since the establishment of the Australian Sport Commission (ASC) in 1985 under the Australian Sports Commission Act 1989, the agency is now comprised of two separate divisions. Each division is responsible for achieving different key outcomes. Sport Australia (SportAus) is responsible for driving greater population engagement and capability in Australian Sport, and the Australian Institute of Sport (AIS) is 'responsible for building sustainable winning systems for Australian athletes that are measured through consistently producing podium success over multiple cycles, inspiring the next generation' . As outlined by the 2021-25 ASC Corporate Plan, the vison of the AIS is 'generating a competitive advantage for Australian athlete success at the Olympic, Paralympic and Commonwealth Games; while supporting other sports where our primary focus is enhanced by faster learning and/or where we generate incremental revenue that would justify the effort'.

The success factors for the vision of the AIS are: •Podium Success - Australians consistently winning medals at major international events •Pride and Inspiration - Australian sporting champions are a positive influence on the community, and •World-Leading System - Australian high-performance system, is recognized as world- leading. With the performance criteria being: •Number of medals and medalists at the Olympic, Paralympic and Commonwealth Games and at International Championships •The level of positive sentiment from sporting results, athlete conduct and engagement within the community, and •Sports' progress against a performance monitoring framework.

This paper investigates the AIS to determine if they are achieving Podium Success. In doing so, AIS funding data per Sport and Olympic participation was compared against medal outcomes to determine if there was a significant relationship. No significant relationship was found. The same methodology was applied to a similar national body, UKSport, of Great Britain. A significant relationship was found between funding, Olympic participation and medal outcomes. A modified methodology was applied to the historic top medal earning countries to determine if there are any patterns of success between countries. It was found that significant inter-country Discipline fixed- effects were the main cause of variation in medal outcomes between countries. Furthermore, differences in intra-country Discipline fixed-effects were observed to be the main cause of variation in medal outcomes between Disciplines for a given country. The results confirm what a casual observer of the Olympic Games can tell you. The Japanese are extremely successful in Judo, the Australians and Americans do exceptionally well in Swimming, and the Russians and Chinese will compete for many of the Artistic Gymnastic medals. The aim of this research was to determine if Australia had a World-Leading System when it comes to sporting success. The research shows that in some parts it does, it also shows that it is possible to do more with less. The research also shows that there needs to be greater care and consideration about where Australia should put their limited resources moving towards the 2032 Brisbane Games, otherwise the results might be the 'arms- race' prisoner's dilemma game. Additionally, this research highlights the important role that the separate national sporting bodies have in determining athlete success in Australia. Further research opportunities exist in determining how Australia has such large and significant inter-Discipline fixed-effects and how other top medal earning countries differ in their Olympic programs.

Time	Day 2 | Thursday, 24 August 2023 | 14.15 – 16.15			
	13: CITATIONS WORKSHOP | WW5	14: BEHAVIOURAL | WW6 Chair: *Tim Pawlowski*	15: LABOUR & LAW | WW8 Chair: *Sophia Gaenssle*	16: DEMAND & VALUATION | WW9 Chair: *Georgios Nalbantis*
14.15	Citations of Sports Economics Publications | *Pamela Wicker, Katrin Scharfenkamp & Lara Lesch* Discussants: *Dennis Coates, Brad Humphreys, Jane Ruseski & Rob Simmons*	(Irrelevant) Pre-Ranks as Reference Points? Evidence from Professional Ski Jumping | *Alex Krumer, Felix Otto & Tim Pawlowski*	Superstar Salaries and Discrimination in F1 | *Carlos Varela-Quintana & Luis Carlos Sanchez*	Political Affiliation and Baseball Attendance, Post-Covid-19 Restrictions | *Mark Wilson, Rodney Paul & Ben Caitlin*
14.45		Celebration Beats Frustration – Emotional Cues and Alcohol Use During Soccer Matches | *Lukas E. G. Fischer, Michael Nagel, Augustin Kelava & Tim Pawlowski*	Economics of Superstars in Basketball: An Empirical Analysis of WNBA and NBA | *Sophia Gaenssle & Arne Feddersen*	Substitution effects and the demand for over-the-top sports broadcasts – The case of German Volleyball | *Georgios Nalbantis & Paul Kühne*
15.15		Risk-taking in organisations--Evidence from a natural experiment | *Mario Lackner & Petar Augustinovic*	A Reexamination of College Athletes as Employees under the Economic Reality Test | *John Wolohan & Fei Gao*	Russian football out of bounds: Fan attitudes towards the governance of the Russian Premier League | *Kristoff Reichel, Ilia Sannikov, Christian Brandt & Markus Kurscheidt*
15.45	The Perceived Role Fit of Women and Men Academics: Gender Stereotypes in Sport Economics? | *Lara Lesch, Katrin Scharfenkamp & Pamela Wicker*	Gender, Age, and Risk preferences | *Mario Lackner & Hendrik Sonnabend*	The Balance Sheet of the "Old Lady" - An Economic Analysis of the (Alleged) 2023 Juventus Balance Sheet Scandal | *Luca Rebeggiani & Michael Drewes*	Age of Top European Football Players When They Started Organized Training and Their Value in the Transfer Market | *Adam Metelski*

13: CITATIONS WORKSHOP | WW5: 14.15

Citations of Sports Economics Publications | ***Pamela Wicker, Katrin Scharfenkamp & Lara Lesch***

According to the publish-or-perish principle, gaining an academic position or being promoted strongly depends on having publications in top scientific journals. This principle causes pressure which is significantly higher for young scholars with limited contracts compared to senior, tenured professors (van Dalen, 2021). Moreover, the pressure to publish is not equal for men and women researchers because of an evident gender publication and citation gap: Across various disciplines, women were found to publish on average less than their men colleagues (Elsevier, 2015; 2017), resulting in lower visibility of their research output. Gender differences in citations in favor of men were also evident (Symonds et al., 2006), but not in all studies (Penas & Willett, 2006). In the field of sports economics, several studies have already examined publications and also the content of the Journal of Sports Economics (JSE). Specifically, Mondello and Pedersen (2003) analyzed publications in JSE (2000-2002) using a descriptive content analysis. They identified length and topic of articles as well as authorship characteristics. The gender makeup showed that 4.7% of coauthors were women. Andreff (2022) also examined the JSE content, but for a longer period (2000-2020). He summarized the topics of articles and provided profiles of (exclusively) men researchers by distinguishing four types: Purists, specialists, switchers, and hobbyists. Moreover, he identified sports economics publications in general economics journals and provided an extensive list of them. Gomez-Gonzalez et al. (2022) examined the content of JSE (2000-2019), while also gathering citations (from Google scholar). Their review gives information about the most cited topics, the type of sports, authorship characteristics including age, gender, and country. The representation of women among coauthors is 9%, although it has increased over time. Their review provides a list of the most publishing women and men authors in JSE as well as the most impactful men and women scholars based on citations. Other studies took a different perspective. Prinz et al. (2011) examined the landscape of sports economics in Germany and found that researchers at economic faculties published more papers than those affiliated with sports science departments. Santos and Garcia (2011) conducted a bibliometric study of sports economics papers that were indexed in the Social Sciences Citation Index (SSCI) database (1956-2009). Their analysis gives information about the number of articles over time, country of publications, source journals of articles, productivity of individual scholars, and concentration of authorship. Their review concludes with a list of most cited articles in sports economics. Collectively, existing bibliometric research in sports economics mostly provided a descriptive analysis of publication characteristics and researcher profiles. Only one article included citations, but did not link publication or author characteristics to citations statistically. To the best of our knowledge, the correlates of citations of sports economics publications have not yet been examined. The purpose of this workshop is twofold. First, empirical evidence on citations of sports economics publications is provided, both descriptively and analytically. Second, the findings will be discussed with a panel of Editors in sports economics.

Quantitative data were collected on publications in the two sports economics journals, i.e., JSE and International Journal of Sport Finance (IJSF). Moreover, given that recognized sports economists hold (Associate) Editor positions at Contemporary Economic Policy (COEP) and Economic Inquiry (EI), sports economics publications were also identified in these journals. The data collection was conducted in the context of a research project on the visibility and perception of women professors in sport economics, management, and sociology, which was funded by the German Federal Ministry of Education and Research (BMBF; reference no. 01FP21009). The considered period for publications is 2006 to 2020, because IJSF had its first issue in 2006. Publication data were collected in 2022 and citation data were added in January 2023. Specifically, the number of citations (from Google scholar) and the authors' H-index were collected for each article. With publication data ending in 2020, all papers have been published for at least two years and could draw citations during this period, which is equivalent to the relevant period for the calculation of journal impact factors. Altogether, the compiled dataset includes all articles published in JSE (n=643) and IJSF (n=330) as well as the sports economics papers published in COEP (n=50) and EI (n=56), resulting in a total of n=1,079 sports economics publications. Publications beyond research articles, such as editorials, introductions to special issue, and book reviews were removed from the data because they typically draw fewer citations and are hardly comparable to research articles. Overall, the empirical analysis is based on n=971 publications. The analysis will start with a descriptive overview of publication characteristics, including topics, number of coauthors, number and share of women coauthors, number of pages, and number in issue. Afterwards, an overview of citation patterns will be provided. The descriptive presentation is followed by an empirical analysis of the correlates of citations which has not yet been conducted in previous research analyzing publications in sports economics. Specifically, a set of regression analyses will be estimated with (logged) total citations and citations per year as dependent variables. These outcomes will be explained by authorship composition including size and gender diversity, publication topics, and further publication and author characteristics.

13: CITATIONS WORKSHOP | WW5: 14.15

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At the time of writing, the data cleaning is currently in progress. Initial descriptive results show that publications in sports economics drew 34.4 citations on average, with a standard deviation of 41.9. On Google scholar, the most cited publications has 253 citations (this might be different on other websites and own records of the publisher). On average, papers were written by 2.1 coauthors (SD=0.92), with 7 representing the maximum number of coauthors. Regarding gender composition of coauthors, the average number of women coauthors is 0.22, reflecting a share of women coauthors of 9.1% (SD=20.6). Over 80% of publications were written without a woman coauthor, while 16.8% of papers had one woman coauthor. Slightly more papers had at least one woman coauthor (19.2%). On 8.0% of papers, the first author was a woman. An initial regression analysis shows that the (logged) number of citations is affected by several factors. For example, the number of coauthors has a significant positive effect, while its squared term is negative, suggesting an inverse u-shaped relationship. The share of women coauthors is significantly and positively associated with total citations, indicating that more women coauthors are beneficial to citation success. Total citations also increase with an increasing number of pages and with the number of years since publication of the article. Further and more detailed analysis of publication characteristics, citation patterns, and correlates of citations will be provided at the workshop in an input presentation. Following this input presentation, the workshop organizers will facilitate a plenary discussion with women and men Editors of the journals included in the analysis. The panel discussion will focus on the selection and order of coauthors, the gender composition of the author team, and the role all this plays in drawing citations. Discussants will also share experiences on research collaborations, publication strategies, and possible pitfalls.

13: CITATIONS WORKSHOP | WW5: 15:45

The Perceived Role Fit of Women and Men Academics: Gender Stereotypes in Sport Economics? | *Lara Lesch, Katrin Scharfenkamp & Pamela Wicker*

Even though higher education institutions are equally accessible for both women and men, the share of women in academia decreases with increasing position (European Commission, 2021). In the (social) sport sciences, only 24.5% of professors in Germany are women (Federal Statistical Office, 2022) and sport is a typically men-dominated field (Messner, 2002). For example, sport economics is associated with math and quantitative methods, and women tend to be underrepresented in such disciplines (Bettinger & Long, 2005). The underrepresentation of women in academia can be explained with gender stereotypes. These gender stereotypes have not changed over the last decades, even though gender roles are less traditional and gender equality is an important societal and political topic (Haines et al., 2016). Working as a scientist is still more associated with men (Nosek et al., 2009), with women being especially underrepresented in typically masculine disciplines like mathematics, engineering, or technology (Diekman et al., 2010), but also the (social) sport sciences, meaning sport economics/management/sociology (SEMS). In men-dominated disciplines, gender stereotypes were found to be stronger, resulting in less acceptance of women (Banchefsky & Park, 2018). Furthermore, men in men-dominated disciplines were found to have stronger gender stereotypes related to scientific work (Carli et al., 2016). Thus, it might be possible that gender roles and stereotypes differ between SEMS disciplines. Investigating and understanding the role fit of women and men academics in SEMS is important to recruit and retain more women in SEMS, since gender stereotypes have a negative effect on women's science career aspirations (Cundiff et al., 2013). Thus, the aim of this study is to investigate role attributes and the role fit of women and men academics in SEMS, resulting in three research questions: (1) What role attributes are ascribed to academics and how are these role attributes perceived for women and men academics in sport economics and in sport management/sociology? (2) What is the fit between position role and gender role of women and men academics in sport economists and in sport management/sociology? And (3) which individual characteristics are related to the perceived role fit? The research questions are answered using social role theory (Eagly, 1987) and role congruity theory (Eagly & Karau, 2002). According to social role theory (Eagly, 1987), gender roles are ascribed to women and men, including expectations about how members of the two groups behave and what they should ideally do. For example, men are more associated with career success, power, and competence, while women are associated with family responsibilities, and caring activities (Bhatia & Bhatia, 2002). Role congruity theory (Eagly & Karau, 2002) reflects the congruity between gender roles and other roles, e.g., occupational or leadership roles. These roles are also related to certain behaviors and attributes, yielding a lower or higher perceived fit between gender and position roles: For example, an academic (leadership) role is more associated with masculine attributes. This dissimilarity results in women being perceived as less competent and less qualified due to a smaller role fit or role congruity (Eagly & Karau, 2002).

The data collection was conducted in the context of a research project on the visibility and perception of women professors in sport economics, management, and sociology, which was funded by the German Federal Ministry of Education and Research (BMBF; reference no. 01FP21009). Data were collected from June 2022 to January 2023 using a quantitative online survey targeted at Bachelor, Master, and PhD students, Post-doc researchers, and professors in SEMS. The link to the survey was distributed in the aftermath of seven conferences in these disciplines and also via email to academics studying or working in these disciplines in Australia, Austria, Canada, Germany, Switzerland, the United Kingdom, and the United States of America. The final sample size for the analysis was n=797 observations, with n=307 for the sport economists subsample and n=485 for non-economists. In the survey, respondents were asked to indicate their perception of academics, women academics, and men academics in SEMS in a randomized order. Specifically, they were asked which attributes academics in SEMS should have and how characteristic these attributes are for women/men academics in the three (social) sports sciences. The item batteries consisted of 16 items, reflecting aspects of leadership, methodological knowledge, media presence, and research topics. All items were rated on a 5-point scale (1=strongly disagree; 5=strongly agree). Starting with leadership attributes, two task-oriented (authoritarian, power-seeking) and two person-oriented (cooperative, solution-oriented in conflict situations) leadership attributes were included (Sczesny et al., 2004). Second, methodological knowledge related to quantitative methods (analytical, statistically competent, good with numbers, able to handle large data sets) is included since gender-mathematics stereotypes were found to impact women's interest and performance in men-dominated disciplines like science, technology, engineering, and mathematics (e.g., Nosek & Smyth, 2011). Third, media presence reflects academics' visibility on social media platforms, in scientific journals, and on television.

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The Perceived Role Fit of Women and Men Academics: Gender Stereotypes in Sport Economics? | *Lara Lesch, Katrin Scharfenkamp & Pamela Wicker*

For example, men are more likely to be invited to talk shows as experts for stereotypical masculine topics like economics or politics (Hetsroni & Lowenstein, 2014; Warren, 2002). Furthermore, women are underrepresented in journals: Between 2015-2019, only 9% of the Journal of Sports Economics authors were women (Gomez-Gonzalez et al., 2022). Fourth, respondents were asked to indicate their perception of four research topics (professional sport leagues, community sport, performance and competition, inclusion and diversity) which are part of SEMS. Afterwards, respondents were asked for several demographic information, e.g., in which of the SEMS disciplines they study/work, their career stage, gender, age, and country.

The empirical analysis included tests for validity and reliability of the item batteries, provision of descriptive statistics and mean comparisons for the perception of role attributes of academics, women academics, and men academics for the sport economics and non-sport-economics subsample. Furthermore, role fit indices for women and men academics were estimated based on Hallmann and Breuer (2010). These indices were used as dependent variables for subsequent regression analyses. After testing for multicollinearity, regression analyses were estimated to investigate correlates of the role fit indices in sport economics and sport management/sociology.

In total, 59.1% of respondents are men and the average age is 27.7 years. Accordingly, two thirds of respondents are students, while 15% are PhD students, 5.4% Post-doc researchers, and 14.1% are professors. More than half of the participants study or work at a university in Germany. Furthermore, 38.7% of respondents indicated that they work or study in sport economics. Turning to role attributes, sport economists and respondents from the other two disciplines differ in the perception of relevant attributes. Sport economists (2.88) rated the authority of men academics as significantly higher than non-sport economists (2.61). Furthermore, non-sport economists agreed significantly more to women and men academics being power-seeking, but both subgroups ranked the power-seeking of women lower than of men academics. Thus, sport economists are more likely to ascribe leadership characteristics to men, in line with previous research about the perception of gender stereotypes in men-dominated disciplines (Carli et al., 2016). For quantitative methods, sport economists significantly differ in the perception of attributes, since they ranked all items higher than non-sport economists for academics, women academics, and men academics. Both subsamples ranked the media presence of academics in SEMS comparably low. However, non-sport economists agreed to a higher extent that academics should be visible in the media and on social media platforms and also indicated a higher perception for both women and men academics. Finally, sport economists showed significantly stronger agreement that women and men academics have expertise in professional sport leagues, community sport, and competition and sporting performance. However, the mean values of the sport economics subsample for men academics are higher than those for women academics for professional sport leagues and competition and performance, respectively. The analysis is ongoing and has not yet been completed. Therefore, the following results can only be considered preliminary. The perceived role fit seems to be higher for women academics than for men academics in both subsamples. For sport economists, being a Post-doc researcher (compared to being a student) and having a men professor as a role model is negatively related to the perceived role fit of men academics. For non-sport economists, post-doc researchers and professors perceive a lower role fit for both women and men academics, indicating that academics in later career stages more critically reflect the behaviors and attributes of their colleagues.

14: BEHAVIOURAL| WW6: 14.15

(Irrelevant) Pre-Ranks as Reference Points? Evidence from Professional Ski Jumping | ***Alex Krumer, Felix Otto & Tim Pawlowski***

The literature exploring the effects of reference points on effort provision and performance in sports is vast (for a recent overview, see Pawlowski, 2021). In this regard, several studies find that current performance, i.e., leading or lagging, serves as a reference point. For instance, Berger and Pope (2011) or Schneemann and Deutscher (2017) reveal loss averse behavior and increased effort provision of players when being close to that reference point. Moreover, there is some evidence that expectations over the outcome from, for instance, performance benchmarks (like par in professional golf) or betting markets might serve as reference points. Again, the result suggest that athlete behavior is affected by loss aversion (see, for instance, Bartling, Brandes, and Schunk, 2015; Pope and Schweitzer, 201). We intend to contribute to this line of research by exploring for the first time whether pre-ranks from the qualification round – even though not directly connected to performance at the main event and, as such, virtually irrelevant for those qualified – could indirectly influence athletes' effort provision and performance at the main event around certain reference points. For doing this, we take advantage of a unique setting, i.e., world cup contests in ski jumping, where 50 athletes qualify to participate in the first round of the main event, of which the top 30 athletes advance to the second (and final) round to determine the winner. Since the top 30 athletes in the final round also receive world cup points and prize money, we focus our analysis on exploring whether rank 30 in the pre-ranks could serve as a reference point that matters for performances in the main event.

Data of athlete performances from men's world cup contests in ski jumping were collected from the official webpage of the International Ski Federation (FIS) for six seasons between 2015-2020. These data contain ranking and performance information for each ski jumper who competed in a given contest, including both competitions rounds and the qualification round. Overall, the sample consists of 4,641 performance observations from 204 athletes competing at 94 world cups. For identification, we exploit a rule change of the qualification procedure which affected the nominal value of qualification ranks. More precisely, until 2017, the 10 highest ranked athletes in the world cup standings were prequalified while the rest competed for the remaining 40 slots of the main event in a qualification round. As such, athletes who were prequalified until 2017 were ranked 1-10 according to their world cup standings and the rest received the subsequent ranks, i.e., the qualification winner was ranked 11th, the runner-up was ranked 12th, etc. This implies, for example, that an athlete ranked 19th in the qualification round, was in fact ranked 29th in the (underlying) expected performance ranking before 2017. However, he may not perceive himself as being close to the elimination cut-off as the nominal value of his qualification rank is much lower. From 2018, the FIS introduced a rule change, requiring all athletes to participate in the qualification round and to achieve a top 50 rank in order to advance to the main event. Since then, the nominal value of the qualification rank equals the actual expected performance rank of each athlete. In our analysis, we compare the average probability to advance to the final round for each rank group before and after the rule change by using t-tests. We also estimate this relation with a linear probability model including an interaction between each rank group and a dummy variable denoting whether the performance observation was before or after rule change, while controlling for home advantage.

As could be expected, the probability to advance to the second round of the main event gradually decreases along the pre-rank groups in the full sample. Focusing on performance around the reference point, however, our preliminary results show that the probability of advancing increases significantly for athletes with a pre-rank of 26-30 in the qualification round. Remarkably, this pattern is only evident after the rule change when nominal ranks equal real ranks in the qualification round.

14: BEHAVIOURAL| WW6: 15.15

Risk-taking in organisations--Evidence from a natural experiment | *Mario Lackner & Petar Augustinovic*

There is a growing body of literature that examines how incentives (Hvide, 2002), heterogeneity in abilities (Kräkel, 2004), competitive pressure (Böheim & Lackner, 2016), or intermediate (relative) performances (Genakos & Pagliero, 2012) do affect risk-taking of individual agents in competitive environments. Relatively little, though, is known about how teams or hierarchical organisations make risky decisions in contests. Grund et al. (2013) investigate how professional basketball teams adjust risk-taking according to the intermediate score and the timing. Lehman & Hahn (2013) estimate the effect of within- and across-period momentum on organizational risk-taking in professional football. It is of central importance to understand how the change in the competitive environment does affect risk taking of organisations. For example, it is crucial to understanding how organisations respond when their environment (i.e. incentives to take risks) changes. This would also be relevant for companies in general whose decisions are influenced by the business cycle. Or for an investment firm that adapts its level of risk-taking to changing market conditions. We exploit high-volume data from professional football to study the impact of a change in incentives on the risk-taking of teams. We investigate how institutional reform in the National Football League (NFL) has affected decision making of teams. Like firms, NFL teams are large organizations trying to succeed on the field with an efficient use of resources. Decisions during a game are typically made in corporation of many agents rather than one person. We will also analyze which organizational characteristics, such as executive experience, have an impact on whether and how this reform has affected risk-taking. In 2011, the NFL initiated a rule change involving the overtime rules, as used in the NFL since 1971. This reform included a substantial change of how a winner was decided in overtime. In case of a tie after 4 quarters of play (60 mins.), an overtime period is being played in NFL games. A coin toss decides which team gets the ball first in overtime and has the possibility to score the tie-breaking points. Before the 2012 regular season, the team which scored first in overtime—regardless of the type of score—won the overall game. After the reform, the first possession could end in a field goal (3 points), and the opposing team would have an opportunity to tie or win the game. If the first drive ends in a touchdown, the result is the same as before the reform, since the team that scores wins the game immediately. In case of a tie after two possessions, sudden death continues until a winner is determined. As the potential gains of risk-taking increase (and the save strategy loses value), teams do take more risk at the beginning of the overtime. Teams, however, do decrease risk-taking when the game is tied late in the fourth quarter. We also estimate that past performance, (relative) ability, as well as the experience of decision makers do play a significant role.

As a consequence of the NFL overtime-rule reform in 2011, the value of a field goal on the first drive in overtime is diminished relative to scoring a touchdown. Scoring 3 points with a field goal will create a score advantage, but it will not win the game. A defensive score or a turnover in overtime has no different consequences than before the reform. Consequently, the change of the overtime rules should incentivize choosing risky plays to score the decisive touchdown and to deprive the opponent of the potential advantage of the second drive. We identify risk-taking on the level of the individual play based on the decision between a run or pass play. A pass play (regardless of how far the ball is thrown) entails the risk that the ball will be intercepted, possibly leading to a score (and thus, in overtime, victory) for the defending team. Supplementary results (not presented in this extended abstract) show that the risk of losing possession of the ball or having an unproductive play is significantly higher when passing the ball instead of opting for a run play. We use play-by-play data from 5,857 games in the NFL from seasons 1999–2021 to estimate the a diff-in-diff model to explain risks-taking on the individual play level, where the binary dependent variable is 1 if the observed play is a pass play, 0 if it is a run play or a punt/kick. We include a vector of play- and team-game specific controls. We estimate team and head-coach fixed-effects. We define the treatment group as all plays during the first drive in overtime. The team who has possession during this first drive is randomly assigned and the reform should change the incentives to take risk. The control group includes all plays during the first drive of the first quarter. By definition, all initial drives at the beginning of a game will not be affected by strategic concerns regarding the intermediate score. These plays should therefore not be affected by the 2011 overtime reform. From a descriptive standpoint, we do not see any evidence that would lead us to reject the crucial parallel-trend assumption.

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Risk-taking in organisations--Evidence from a natural experiment | *Mario Lackner & Petar Augustinovic*

We estimate that the propensity to take risk increases by 4.6 percentage points (ppts.) after the reform for all observed plays during the first offensive possession in overtime. Adding additional control variables does not affect this estimate. The results are confirmed for an extended control group of all offensive possessions in quarter 1 with a tied score. In addition, we estimate a model where we use only plays from games where an actual overtime was observed. The estimated effect is more pronounced but not statistically different from the other results. Alternatively, we also introduce team-game fixed-effects. Again, we estimate a statistically significant positive effect of the reform on risk-taking for plays during the first drive in overtime. So far, risk taking in our study is defined as a pass play versus a run play. However, a share of all pass plays is identifiable as “deep passes”. Additional results based on a sample excluding all deep passes confirms our estimates, as we estimate an effect which is quantitatively similar to previous results. After the reform, an overtime should be decided with a significantly lower probability with the first drive. Therefore, if the game is tied late in the fourth quarter, the incentive to take risk should change due to the reform. We also estimate that the propensity of teams to take risks decreases after the reform for plays late in quarter 4 when the score is tied and overtime is likely. Preliminary results (not reported) suggest that (relative) team ability, past performance, as well as expected performance do affect the estimated effect of the reform on risk-taking in overtime. One focus of our analysis rests on the interaction of decision makers. Preliminary results suggest that the experience of decision makers does have a significant effect on how the reform affects risk-taking of teams. Our results shed new light on how changes in the incentive structure do affect risk-taking of organisations. The NFL initiated the overtime reform to reduce the randomness associated with winning the coin toss in overtime. This was achieved with limited success. The reasons for this can be found in our results, as the reform - in addition to its intended consequences - lead to a strategic change in team behavior

14: BEHAVIOURAL| WW6: 15.45

Gender, Age, and Risk preferences | *Mario Lackner* & *Hendrik Sonnabend*

People regularly decide about how much risk they want to take in different areas, such as career choices, health, and investment decisions. For this reason, risk preferences profoundly impact various socioeconomic outcomes. Prominent examples are the persistent gender gaps in wages, earnings, and social positions which have been (partly) attributed to gender differences in risk preferences (e.g., Bertrand, 2011; Blau and Kahn, 2017). This is because leadership positions often require a certain degree of risk tolerance; hence, risk-averse individuals may decide not to apply. In economics, a standard assumption is that risk preferences are stable over time. However, empirical evidence seems to contradict this assumption (Schildberg-Hörisch, 2018). Preferences for risk-taking are typically found to evolve early in life, during the first stages of education, and transmitted across generations (e.g., Dohmen et al., 2012; Alan et al., 2017). Thus, any gender gap in risk-taking should be rooted in early child development. Andreoni et al. (2020) find that girls (not boys) become more risk-averse when they grow older. Following on from this, in this study, we investigate the effects of past relative performance in a competitive environment on the risk preferences of female and male agents. Our data come from semi-professional diving competitions organised by the national governing body of diving in the United States (USA diving). The sample includes complete career histories for more than 2,000 semi-professional divers between ages 4 and 45: competition results, personal characteristics, and information on individual performances. This gives us a unique opportunity to investigate the development of risk-taking preferences over individuals' early life spans or careers. Diving competitions involve substantial risks related to accidents that can lead to short- and long-term health consequences (Blanksby et al., 1997). The risk increases with the height of the dive, especially for young divers (Day et al., 2008); depending on age restrictions, athletes can choose from heights between 1 and 3 metres (springboard) on the one hand and 5, 7.5 and 10 meters on the other hand (platform). We study the dynamics of risk preferences over time. Athletes may base their risk-taking decisions on past (relative) performance. For example, a diver may have the incentive to switch to a higher platform if the chances of success at low heights are low due to intense competition. In other words, such a move would mean trading more risk for better career prospects. Our analysis then helps us understand how women might drop out of a career track due to a widening gender gap in risk-taking. Suppose male divers are more likely to adapt to higher risks to prolong their careers (and do it faster). In that case, this could explain why empirical findings suggest that women in leading positions report themselves as more risk-loving than their male counterparts (Adams and Funk, 2012).

We estimate a two-way fixed effects model stratified by gender and critical characteristics. In particular, we are interested in the role of age and experience in the risk-taking decisions of athletes from both genders. First results for a subsample (about 15% of all data we plan to collect) suggest a negative association between past success in low-risk competitions and the probability of participating in a high-risk platform contest. Unlike for female divers, estimates of β_1 are negative and statistically as well as economically significant for male divers. Additionally, the estimates suggest that the association is affected by age and experience. To identify the causal effect of past performance on risk-taking, our next step is to estimate an event study-type model with 8 indicator variables for the four years before and after the first career win in $t = 0$. In addition, the data and the competition regulations allow us to exploit discontinuities in the access to high-risk platform competitions. That is, depending on the age, the maximum height increases from 5 to 7.5 to 10 metres. We will follow a regression discontinuity strategy to quantify how men and women respond to the expansion of the high-risk strategy.

15: LABOUR & LAW | WW8: 14.15

Superstar Salaries and Discrimination in F1 | *Carlos Varela-Quintana & Luis Carlos Sanchez*

Wage inequality in the US has been a major concern for the past 40 years, with the P90/P10 decile ratio rising from 3.77 in 1981 to 5.00 in 2019 (OECD, 2022). The increase of college education returns allows explaining the phenomenon from 1980 to 2000, but recent studies have found evidence that, since 2000, most of the wage inequality has occurred within the group of university graduates (Autor et al., 2020). Rosen's (1981) superstar theory as well as decentralization of collective bargaining and discrimination (Mishel, 2022) can help to solve this puzzle within the educated workforce. Economists have often used sports as an example of labour markets in which small talent differences lead to large wage gaps. However, most of this research has been done in sports where the talent is the most relevant element in winning. Does the superstar effect continue in industries where investment in capital goods is much more relevant? With the car explaining close to 20% of the success (Bell et al., 2016), the F1 job market becomes a perfect laboratory to fill this gap. Here, we study how talent, firm characteristics, popularity and discrimination explain wage differences of highly-qualified workers at the upper right tail of the distribution.

For fifty years, the Mincer earnings function has been the gold standard for estimating returns to human capital. Here we use a version widely employed in the literature (see Simmons, 2021) in which, in addition to potential experience, we include past performance, driver popularity, nationality discrimination, and team characteristics. The dependent variable is the annual salary of driver i in season t expressed in logarithms. Age, our first explanatory variable, captures the drivers' potential experience (from kart racing to F1) as well as their physical capabilities. Two additional human capital variables were incorporated taking advantage of the richness of data available in F1. On the one hand, we include the experience in the industry using the total number of F1 races disputed in past seasons. On the other hand, we estimate drivers' innate talent through their past performance — for this, we use the average points per race earned in the previous five years. As usual, we include the quadratic form to account for diminishing returns. The model contains other predictors besides human capital. First, we consider the different investment in capital goods—the demand side of the labour market—using the car budget expressed in logarithms. Second, following Garcia-del-Barrio and Pujol (2007), we utilise drivers' popularity on the Internet (number of searches expressed in thousands) which allows incorporating the alternative explanation of the Superstars theory given by Adler (1985). Third, we enter a dummy variable to test for the existence of discrimination based on nationality. Finally, we include the inverse Mills' ratio for correcting sample selection bias and season dummy variables to control for time-specific fixed effects. To estimate the above equation, we employ OLS. A quantile regression is used to analyse the contribution of these variables at the upper right tail of the distribution. Our empirical study uses information of 63 drivers over eleven seasons (from 2009/10 to 2019/20), providing an unbalanced panel of 237 observations. Performance, salaries and budgets were obtained from the websites www.statsf1.com and www.crash.net. Driver popularity was collected from Google Trends and Keyword Surfer.

Our analysis shows that, despite the key role that technology plays in this sport, experience and past performance are good salary predictors from 2009 to 2019. After controlling for human capital, we find that car budget, popularity, and nationality discrimination also contribute to explain income disparities. The quantile regression provide evidence that talent, investment in capital goods and nationality discrimination are more closely related to earnings in the upper quantiles of the distribution.

15: LABOUR & LAW | WW8: 14.45

Economics of Superstars in Basketball: An Empirical Analysis of WNBA and NBA | ***Sophia Gaenssle & Arne Feddersen***

There are different theories on the inequality of income and superstar salaries in economics. Superstars earn disproportionately high incomes, often millions of dollars. Since the seminal papers of Rosen, Adler, and MacDonald in the 1980s, characteristics of superstars and the phenomenon have been analyzed theoretically and empirically. The key theoretical arguments can be summarized as follows: Rosen (1981) argues that labor market demand may be concentrated on superior talent and that poorer quality is only an imperfect substitute for higher quality. MacDonald (1988) presents a dynamic version of Rosen's theory. Adler, by contrast, argues that consumption capital and positive network externalities are the drivers of superstars and, thus, argues that popularity may be a determinant of (superstar) salaries. The empirical (sports) economics literature on the emergence of superstars and superstar salary inequality can be broadly divided into two groups. The first group of studies use talent proxies in order to explain (superstar) player salaries (e.g., Krueger, 2005; Lucifora & Simmons, 2003). However, these studies do not use any popularity measure and, thus, do not identify any Adler effects. The second group uses both talent and popularity proxies (e.g., Franck & Nüesch, 2012; Lehmann & Schulze, 2008) and, thus, test for the different superstar theories. Our empirical strategy is, thereby, closely related to Franck and Nüesch (2012) and Prinz, Weimar, and Deutscher (2012).In particular, we use North American basketball as area of research since there are only five players in one team, where one a superstar player influences the outcome considerably. Within this paper, we want to answer the following research questions: What qualities distinguish basketball superstars from the industry average so that they earn so much more? Is their talent or their popularity driving their monetary success? Our study contributes to the field of the analysis of superstar salary determinants in several ways. First, within sports, talent "on the field" can be defined and measured more objectively and accurately than in areas like entertainment or music (or other performing arts). Thus, the analysis of superstardom in sports brings valuable empirical insights to the (competing) theoretical explanations. Second, while empirical studies on this phenomenon, as highlighted above, are available, new technologies of the digital age promisse far more insights and possibilities for research. For example, compared to studies conducted ten or more years ago, publicly available data on (social) media activities can be obtained (scraped) on a much broader scale and breadth. Third, to our best knowledge, this contribution is the first to analyze superstardom for male and female sports.

Within this project, we study basketball superstars' performance and non-performance markers to investigate if factors other than their in-game talent are decisive for success. We collect individual player salary and player performance data from two North American leagues: National Basketball Association (NBA) and Women's National Basketball Association (WNBA). Using various scraping techniques, we systematically collect an unbalanced dataset including a time series from 2018 to 2022. Performance data is collected from basketball-reference.com for both NBA and WNBA, while salary data is collected from basketball-reference.com (NBA) and spotrac.com (WNBA). Performance data contains, inter alia, minutes played, points, rebounds, steals, etc. Additionally, player specific data on age, position, draft rank, etc. have been collected. Furthermore, in order to measure non-performance markers of external popularity of the individual players, we collect data on Twitter and Instagram popularity (i.e., number of followers, posts, and average likes) as well as newspaper mentioning via LexisNexis. The player database from basket-ball-reference.com contains different social media handles (for example for Twitter and Instagram) and, thus, social media profiles for player in our dataset can be identified and respective data can be collected. Our observation period is running from the 2012–2023 season for the NBA and, due to limitations in the availability of salary information, 2018–2023 for the WNBA. The player dataset contains 1467 player for the NBA and 469 for the WNBA. In a first step, following Franck and Nüesch (2012), we regress the logarithm of a player's non-performance marker (i.e., our popularities measures) on the players' individual on-field performance using OLS. In our main analysis, we use the residuals of this regression as proxy for a player's non-performance star quality. Furthermore, we include a player's performance markers in the regressions. Our main model is estimated by means of quantile regressions since OLS regressions will not be able to correctly capture the superstar effects.

Our preliminary findings show that performance markers, and thus in-game talent, have a significant influence on income. We are planning to draw further results on popularity markers once the data collection is finished.

15: LABOUR & LAW | WW8: 15.15

A Reexamination of College Athletes as Employees under the Economic Reality Test | *John Wolohan & Fei Gao*

In the last ten years there has been a growing call from college athletes, the National Labor Relations Board (NLRB) and the United States Supreme Court for colleges and universities to recognize college athletes as employees. While the National Collegiate Athletic Association (NCAA) and schools have so far resisted the call, claiming that the NCAA's amateur sports model is essential for college sports. The purpose of this paper is to examine whether, as Jennifer A. Abruzzo, the NLRB's general counsel, wrote in a memo dated September 28, 2021, college athletes should be considered employees. While Abruzzo's memo only addressed the relationship between athletes and private schools, this paper examines college athletes in general. The paper begins by briefly examining how courts have historically viewed college athletes for workers' compensation purposes. In holding that college athletes were not employees of their schools; the courts have used an economic reality test. (See: Rensing v. Indiana State University Board of Trustees, 444 N.E. 2d 1170 (1983) and Coleman v. Western Michigan Univ., 125 Mich. App. 35, 336 N.W. 2d 224 (1983)). The economic reality test is a four-prong test used by the courts to determine whether there existed an "expressed or implied contract for hire" within the meaning of an employment relationship. These factors include: (1) the proposed employer's right to control or dictate the activities of the proposed employee; (2) the proposed employer's right to discipline or fire the proposed employee; (3) the payment of "wages" and, particularly, the extent to which the proposed employee is dependent upon the payment of wages or other benefits for his daily living expenses; and (4) whether the task performed by the proposed employee was "an integral part " of the proposed employer's business (Coleman v. Western Michigan University, 336 N.W.2d 224 (1983)). Since most cases have ruled that college sports were not an integral part of the school's 'business' (education), the paper will examine how the courts have viewed the economic reality test in past workers' compensation cases. Finally, the paper will examine the changes in college sports over the past thirty-five (35) years and reexamine how the court might view the four factors of the economic reality test today. In particular, the paper will focus on the Supreme Court's decision in Alston, the National Labor Relations Board's decision in Northwestern, the post-Northwestern NLRB's 2017 and 2021 memos on college athletes, and whether the money now being paid to college athletic programs, from tickets, television, and sponsorships somehow changed the relationship between athletes and schools in cases that are currently under review in the Federal Courts (Johnson. V. NCAA) and the Equal Employment Opportunity Commission (EEOC), in a complaint filed by the National College Players Association (NCPA).

The methods used are historical and quantitative. The paper will be reviewing prior legal decisions and the history of student athletes' cases claiming employment status. To illustrate the growth of revenue in college athletics over the past thirty-five (35) years, the paper will use simple descriptive statistics based on the NCAA annual revenue reports.

While Thirty-five years ago, the courts may have been on solid ground when ruling that scholarship athletes were not performing "an integral part " of the university's business, which was education. Today, especially with scholarship athletes in the sports of football and basketball, such an argument is more difficult or even impossible to support. As illustrated by the growth in athletic revenue at colleges and universities, which can generate over hundreds of millions of dollars for colleges and universities, and the amount of control coaches have over their athletes, college athletes resemble traditional employees instead of college students.

15: LABOUR & LAW | WW8: 15.45

The Balance Sheet of the "Old Lady" - An Economic Analysis of the (Alleged) 2023 Juventus Balance Sheet Scandal | *Luca Rebeggiani & Michael Drewes*

Since November 2022, the Italian football club FC Juventus is in the middle of an (alleged) balance sheet scandal. This led to a surprisingly quick replacement of the entire board of the public limited company. In addition, the club was deducted 15 points in the current championship in a first sports law ruling, which decisively compromises the sporting prospects of success for the 2022/23 season. This scandal is essentially a balance sheet scandal, as Juventus Turin is accused first and foremost of balance sheet fraud. The club, on the one hand, and the investigating authorities, on the other, have different views on whether this is in fact a case of deliberate accounting fraud or of divergent but justifiable interpretations of the relevant accounting standards. As a result, not only the Italian public prosecutor's office and the Italian stock exchange supervisory authority (Juventus Football Club S.p.A. is traded as a public limited company on the Milan stock exchange Euronext), but also the European Football Union UEFA investigated the matter. Further investigations, e.g. by the cartel authorities, are likely to come. In this respect, aspects of sports economics as well as criminal law, stock corporation law and competition law are intertwined in this case.

The analysis of issues arising from balance sheets of professional clubs is a traditional area of sport economics. The question of whether "player values" should be capitalised in the balance sheet of sports clubs is hardly controversial any more. Nevertheless, with regard to the capitalisation of player assets, delimitation and valuation problems arise (paraphrased in this specific case with the Italian term “plusvalenza” - capital or book profit), which are one aspect of the alleged balance sheet scandal. It remains controversial how much subjectivity is allowed to prevail when setting transfer prices for players. The second aspect of the alleged accounting scandal, the deferral of player salaries, is also an accounting problem. The article first examines the question of whether the accrual problems underlying the accounting scandal were justifiable or not in accordance with the accounting standards. Subsequently, we will adopt methods of balance sheet analysis in order to analyse different consequences of the alleged scandal, with a particular focus on its links to the UEFA's Financial Fair Play and Financial Sustainability regulation, then to general problems of Italian football, and finally to related aspects of competition economics.

1. The core of the problem remains the question of the correct valuation of professional players and their accounting. The article provides an analysis of the accounting law problem and formulates recommendations that follow the accounting law analysis.

2. The consequences of Juventus’ approach affect not only criminal and company law, but also (sporting) competition both in Italy and at European level. This in turn calls for a sports policy solution that focuses more on the issues of financial sustainability and competitive balance. The article discusses possible approaches on the basis of the latest research results.

3. UEFA's Financial Fair Play was a major motivation for Juventus Turin's accounting approach. The article discusses the extent to which the current system sets false incentives and how its balance sheet is to be assessed in the context of the discussion on declining competitive balance.

16: DEMAND & VALUATION | WW9: 14.15

Political Affiliation and Baseball Attendance, Post-Covid-19 Restrictions | *Mark Wilson, Rodney Paul & Ben Caitlin*

In 2022, Minor League baseball moved fully past the strictest of COVID-19 pandemic restrictions and reverted back to the possibilities of full attendance at games. This was the first year of full attendance possibilities following the major restricting of Minor League Baseball which took place in 2021. This study compares attendance across all official Minor League baseball leagues and individual cities from before the COVID-19 pandemic and this past season of 2022. Changes in league affiliation or location are accounted for in the data set and whether cities did better or worse at the gate compared to pre-pandemic are calculated. Given differences across cities and leagues, we further this analysis by utilizing data on political voting by district. The Cook Partisan Index contains information on how each district in the United States voted in the most recent presidential elections and through their PVI index which notes which political party, if any, had an advantage in the district. These districts are matched with each Minor League team, which allows for investigation of attendance trends by political affiliation across the country. This creates a measurable range of party affiliation across the cities of Minor League Baseball. The null hypothesis observed is that political affiliation may have played an important role in how comfortable fans felt in returning to watch their hometown team in person at the stadium. General sentiment toward the pandemic likely reveals that Democratic areas were likely to be less apt to attend games in person due to removal of mask and social distancing restrictions. In general, Republican-dominated areas were likely more eager, all else equal, to get back to normal attendance at sporting events. We test if the majority political affiliation of the area significantly affected attendance in Minor League Baseball cities and offer potential policy responses and initiatives. We are in the process of extending the study to MLB. It's complicated by the fact MLB teams are all located in large urban districts which all lean heavily Democratic. To get around this issue, we are manually constructing partisan voting indices for the metropolitan areas, which do exhibit substantial variation in partisan affiliation as teams draw from the entire metro area.

Our findings suggest that minor league teams located in Republican congressional districts experienced a statistically significant larger rebound in attendance than teams in Democratic districts.

16: DEMAND & VALUATION | WW9: 14.45

Substitution effects and the demand for over-the-top sports broadcasts – The case of German Volleyball | *Georgios Nalbantis & Paul Kühne*

The last decade there has been a gradual shift of consumers away from linear television to over-the-top (OTT) streaming services. In the US, the number of pay TV households is expected to drop to around 57 million in 2026 from 100.5 million in 2014 (Lebow, 2022). A similar trend is also evident in Europe with forecasts suggesting that until 2027 the number of pay TV households will drop by over two million in Germany (currently around 24 million households) (Stoll, 2022). At the same time, the over-the-top (OTT) global market size from around US$ 150 billion in 2021 is expected to reach about US$ 1,240 billion by 2030. Similar to the boom of pay TV platforms in the late 1990s, a key driver to the remarkable growth of OTT platforms is sports, one of the most appealing and valued form of media content. In the recent years, several sports-dedicated OTT service providers have entered the market (e.g., DAZN in Europe, ESPN+ in the US) achieving record-breaking ratings and thus initiating the transformation of the live sports broadcasting landscape (Jones, 2021). Historically, television networks have dedicated enormous resources and time to cover the most popular sports, for instance, football in Europe or the major league sports in North America. Minor leagues and niche sports on the other hand, lacking the resources or brand recognition, have had limited access to linear television. The rise of OTT streaming has been a game-changer. With the evolution of OTT services, minor leagues are provided with an avenue to reach a broader audience and gain exposure and thus an opportunity to compete with more established leagues and sports. They can now monetize their content generating additional revenues not only from subscription packages but also from advertising. While streaming services have revolutionized the way people consume sports content, creating a more diverse and exciting sports landscape, in contrast to the rich literature analyzing the demand for linear televised sports (for a review see Nalbantis & Pawlowski, 2016), so far close to nothing is known about the OTT demand for sports content in general and the OTT demand for niche sports in particular. In this manuscript we address this notable gap and offer insights on a highly relevant market. Since the emergence of OTT services alongside the already established linear television broadcasting (paid or free-to-air) has greatly increased competition for live sports media rights as well as for consumer attention (Evens & Smith, 2022), focal point of our research are potential substitution effects that may arise in the online consumption of sports content. Given that OTT platforms focusing on niche sports have to overcome the hurdle of the well-established television networks to achieve sustainable growth and that for niche sports and minor leagues revenues from OTT media rights are increasingly becoming a vital revenue stream, insights on potential substitution may provide valuable insights to the stakeholders in the industry.

To this end, we utilize game-level OTT viewership data of the German Volleyball Bundesliga (VBL) containing both men's and women's matches from three different seasons (2019/20-2021/22). Live streaming data were provided directly by the VBL and contain the number of views per game. Excluding games with missing data the final estimation sample used contains 282 games for women's men's VBL and 302 games for men's VBL. We analyze the impact of overlapping broadcasts on OTT viewership within sport (volleyball streaming vs. volleyball telecasts; volleyball streaming vs. volleyball streaming), across genders (volleyball men vs. volleyball women) as well as across sports (volleyball streaming vs. football broadcasts and football streams) using ordinary least squares regressions. In line with previous literature on sports OTT demand (Feng et al., 2020) and demand for televised sports (Nalbantis & Pawlowski, 2016), we further control for team and game quality aspects, for streaming and scheduling issues, as well the impact of Covid-19 restrictions.

Despite the fact that the rise of streaming services has been a game-changer for minor sports leagues, to date empirical work analyzing the demand for OTT sports content has been sparse. In this manuscript, we not only address this notable gap but also provide for the first-time insights on the link between traditional viewership and OTT viewership. All in all, our preliminary findings point towards that despite the fact that OTT services are becoming increasingly popular, still fans seem to prefer watching games on TV when given the opportunity to consume the same game in both platforms. We further find that viewers of women's volleyball seem to consider men's volleyball games as close substitutes, while the viewership of men's volleyball (in contrast to women's volleyball) is adversely affected by overlapping football games.

Russian football out of bounds: Fan attitudes towards the governance of the Russian Premier League | ***Kristoff Reichel, Ilia Sannikov, Christian Brandt & Markus Kurscheidt***

The governance of European football has recently shown contrary dynamics. While English top clubs like Chelsea FC or Manchester United are freely traded between private investors, the German Bundesliga decided to strengthen their rules limiting the voting rights of club investors to 49%. The majority votes remain with the membership of the association club. These dynamics accentuate the dichotomy of league governance models, which can be described as market vs. hybrid or hierarchical organisation (Williamson, 2008). Both paradigms claim to be in the best interest of their core stakeholders: the fans (Senaux, 2008; Bauers et al., 2020). Various studies show that fans do care about the governance of their favourite league (García & Welfort, 2015; García & Zheng, 2017; García & Llopis-Goig, 2020). A recent review of the literature suggests that a large group of fans tends to a negative attitude towards the market dominated governance model (Winell et al., 2023). Active fans feel that their league or team are 'hijacked' by commercial logics, shifting the role of fans to a more passive consumer (Numerato & Giulianotti, 2018). However, most studies on fans were conducted in Western-European countries, particularly in England, which could be a potentially limiting factor (Winell et al., 2023). García and Welfort (2015) argue that more studies are needed to fully understand fans' engagement and attitudes towards the governance of football leagues. Ma et al. (2022) provide first evidence on fan attitudes in a non-European country with a restrictive league governance. Their study on football fans in China finds rather positive attitudes towards marketisation compared to their European counterparts. Besides China, Russian football is an interesting and large-market case, also with a restrictive league governance. Given the post-socialist background of Russia, professional football still is significantly controlled and financed by state entities (Sannikov et al., forthcoming). Moreover, based on its large market potential, Russian football is described as underperforming at the club and national level (Renz, 2020; Veth, 2021). Russia also serves as an example for other post-socialist states, where fans perceive football as less market-driven than in Western European countries (Choluj et al., 2020). Therefore, this study analyses how fans perceive the governance of the Russian Premier League (RPL) with a focus on aspects of commercialisation. The contribution of the research is twofold: first, preferences of fans for market vs. hybrid or hierarchical organisation of football leagues are tested. Second, missing evidence beyond Europe's top-five leagues are presented.

The data is generated by a large online survey among active fans of the RPL (N=4,098), measuring attitudes towards features of the league governance. The design of the survey follows the approach of Ma et al. (2022) for Chinese football fans. The questionnaire, adapted for the Russian case, operationalises established constructs in the pertinent fan research, such as the psychological attachment of sports supporters to their favourite team (Biscaia et al., 2018; Wann et al., 2001) and the diverse issues of debate concerning football commercialisation and governance (García & Welford, 2015; Webber, 2017; Uhrich, 2021). Further adjustments were made for specifics of Russian professional football, e.g., the introduction of a fan ID or the exclusion of Russian teams from international competitions (due to the war in the Ukraine). The structure of the questionnaire and the resulting (independent) variables are grouped into categories of determinants of the overall or general attitude towards football commercialisation (i.e. COMMERCE as dependent variable in regressions): (1) self-reported attendance behaviour; (2) membership or attachment; (3) fan identity; (4) attitudes towards commercial issues in football; (5) attitudes towards football governance; (6) attitudes towards club governance; (7) behavioural intentions regarding future fan behaviour; and (8) sociodemographics. Beyond the item variables on discrete statements within the item batteries of the questionnaire, factor variables that cover two or more theoretically related item variables were created. These are used to test broader constructs and for robustness checks by analysing model variants of regressions. Factor variables are computed by the means of the represented item variables. The attitude measurement applies the intuitive five-point Likert scale (1 = disagree to 5 = agree) throughout that has proven to be statistically equivalent to larger scales in recent methods research (Revilla et al., 2014). Overall, 47 ordinal variables, twelve binary variables, and two metric variables for the constructs of age enter the exploratory data analysis by multiple regressions on the two alternative dependent variables COMMERCE (ordinal) and BINCOMM (binary). The translation from English/German into Russian was performed by a male Russian PhD student in sport governance and a female Russian teacher of German by using the technique of backtranslation and pretests for understanding and consistency issues. Considering the Russian socio-political context, online sampling was chosen because of the current geopolitical conflicts and associated problems of travelling to Russia. The sampling followed principles of clustered convenience sampling that tends towards representativeness by rising sample size (Jones, 2015). The survey was distributed from 20 September through 24 October 2022 by social media channels and fan-based internet sport communities. The sampling procedure generated data with high variance across relevant traits of respondents. While the age (M=32.32, SD=10.20 with 39% in the range of 30 to 39 years) is quite balanced, the education is extraordinarily high (75% with academic degree) and the sample is predominated by male (95%). However, this reflects observations of Russian fan culture. The distribution of participants (REGION) is spread across the country.

16: DEMAND & VALUATION | WW9: 15.15

Russian football out of bounds: Fan attitudes towards the governance of the Russian Premier League | ***Kristoff Reichel, Ilia Sannikov, Christian Brandt & Markus Kurscheidt***

The overwhelming majority of participants (92%) have a favourite club: 94% of those support a club of the RPL (1st league) and 3% each of the 2nd and 3rd league. On average, respondents attend 5.05 (SD=5.32) home and 3.09 (SD=4.52) away matches per season on average. This is reflected by the fact that, in comparison with other fan studies, only 9% of respondents are season ticket holders and away matches are rarely attended, which is typical for Russian fan culture, given the long distances between club locations in the largest country in the world. Most respondents prefer a seat in the backstraight (67%) or in the fan curve (35%), while family block (11%) and business seats (4%) were less mentioned. In addition, the high mean of IDENTITY (M=4.19, SD=0.87) suggests that the respondents tend, on average, to be passionate about their favourite club, while official fan club memberships are not common (9%) and only 5% describe themselves as Ultras. The respondents show great dissatisfaction with the governance of their favourite club and Russian football governance in general. In contrast to studies on European football, commercialisation is not seen as problematic and increasing media coverage (M=2.45, SD=1.18) or presence of sponsors in stadia (M=2.45, SD=1.18) is advocated. However, player salaries (M=2.30, SD=1.10). and transfer fees (M=2.23, SD=1.05) are viewed negatively. Therefore, 82% of the respondents do not think that commercialisation harms the fans (disagree to modest, M=2.45, SD=1.18), so that there are no consequences in terms of fan behaviour, e.g., `will give up lived fan culture´ (M=1.55, SD=0.85) or `turn away from Russian football´ (M=1.50, SD=0.90). Instead of aspects of commercialisation, the strongest point of criticism seems to be a lack of appreciation or involvement of the fans, e.g., `clubs should more approach fans´ (M=4.57, SD=0.69) and a `disregard of fan rights` (M=4.30, SD=0.97). First (ordered) logistic regressions were tested for the dependent variable COMMERCE (`Commercialisation harms the fans´, 1-5 scale) and show a fairly good model fit. Expectable, the results show that higher attachment (ATTACH***), identification with the club (IDENTITY***) and aspects on less fan activities in the future due to increasing commercialisation (INTENTION***) tends to a higher significant agreement. Not surprisingly, factors with a positive attitude towards commercialisation (ECONOM***, MODERNFOOTB**) are shown to be rather negative with regard to a perceived restriction of fans. Beyond that, less to be expected, EDUCATION*** and (weakly significant) AGE* increase the rejection of the dependent variable COMMERCE. Perhaps fans with a higher level of education are less involved in the (active) fan scene or they even see potential opportunities for the fan scene in increasing commercialisation. While the econometric analyses have not yet been completed and further results (e.g., regression analyses for the RELATION between fans and club) will be presented at the conference, this article presents the first comprehensive survey of Russian football fans to analyse fans' attitudes towards RPL governance and commercial issues.

16: DEMAND & VALUATION | WW9: 15.45

Age of Top European Football Players When They Started Organized Training and Their Value in the Transfer Market | *Adam Metelski*

The budgets of the best football clubs are continually growing, and the values of the best players are also increasing. Football is definitely the most popular sport in the world with 270 million active players of which the majority is younger than 18 years (Rössler et al., 2017). Football is also very popular among TV viewers, for example the final of the last European Championship between England and Italy was watched by 31 million people in England only (population 56.27 million), and it was the highest TV audience in that country since the funeral of Diana, Princess of Wales, in 1997 (BBC, 2021). In total, EURO 2020 matches were shown in over 200 territories around the world, with an estimated total live event audience of 4.7 billion (UEFA, 2021). Obtaining a good economic valuation of football players is crucial because it allows, to some extent, the valuation of the club, budget planning, and remuneration (He et al., 2015). Many scientists have tried to determine which factors have the greatest impact on the value of players (Felipe et al., 2020; Kiefer, 2014; Majewski, 2016; Metelski, 2021; Post, 2018; Tunaru et al., 2005). Some researchers point to the player's age as an important factor of his value (Lovell et al., 2015), others to the player's position (Di Salvo et al., 2007), sports performance (goals scored, passes, assists, etc.) (Deutscher & Büschemann, 2016), and others underline the role of physical characteristics (Bryson et al., 2013). Moreover, some studies point out the importance of variables that are not strictly related to sport, such as nationality (Schokkaert, 2014) or the popularity of a player (Lehmann & Schulze, 2008). Even though it is relatively difficult to estimate the exact value of players, in recent years it can be noticed that their value is generally increasing, as evidenced by, among others, several spectacular transfers carried out in recent years. Young elite football players need to develop in multiple areas to be successful, for example physical, technical, tactical, and psychological. To become a professional football player, young people have to invest large numbers of training hours over a long period of time (Jonker et al., 2019). It is also worth adding that a sports career is non-typical because it starts early in life, lasts relatively short, and the greatest successes usually occur when non-athlete peers are just starting to climb the steps of a typical professional career (Lenartowicz, 2009). In this study, it was decided to check at what age the leading footballers in Europe started organized training at a youth football academies/clubs. It was also checked whether there are differences between particular countries and whether the starting age is related to the financial value of the player.

This study is focused on one of the largest football tournaments – EURO 2020. The European Championship, formally the UEFA European Championship, also called the Euro, is a quadrennial tournament held between the member countries of the Union of European Football Associations (UEFA) (Britannica, 2021). Euro 2020 was originally supposed to be played in 2020, but due to the COVID-19 pandemic, it was postponed to 2021. Euro 2020 was held across Europe for the first time in the competition's history and the following cities hosted the games: Amsterdam (Netherlands), Baku (Azerbaijan), Bucharest (Romania), Budapest (Hungary), Copenhagen (Denmark), Glasgow (Scotland), London (England), Munich (Germany), Rome (Italy), Saint Petersburg (Russia) and Seville (Spain). Euro 2020 started on 11 June and ended on 11 July and 24 national teams took part in it (UEFA, 2021). Data on player values was collected from the website transfermarkt.de. Transfermarkt.de is a German-based website that compiles football information, such as scores, results, statistics, transfer news, and fixtures. Transfermarkt.de is a good open-source platform of information about player values and transfer fees. The study consisted of collecting data on the individual value of the 620 players of all 24 teams that played in Euro 2020. The age of the players at which they joined the football academy was determined on the basis of sources available on the Internet, such as local websites of the federations, associations, fan pages, and interviews with the players. As of today, there is no database in which such information could be found. Starting playing football in this article means joining a youth academy/club and starting organized training sessions with a qualified football coach. In the case of some players, it was not possible to determine at what club and age they started their football training. Ultimately, it was possible to find out information for 459 of the 620 players at the tournament. Descriptive statistics and statistical tests were used in the study and Microsoft Excel and IBM SPSS Statistics 27 were used to process the quantitative data of research.

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Age of Top European Football Players When They Started Organized Training and Their Value in the Transfer Market | *Adam Metelski*

In total, 620 players entered the tournament. Their average value was 16.84 million EUR, and total value 10,480.83 million EUR. In Euro 2020, there were national teams with many football stars, as well as teams whose players mostly play in weaker leagues. It is worth noting that the value of England (1273 million EUR), the most valuable national team, was 28.5 greater than the value of the least valuable national team – Finland (44.5 million EUR). There were also differences in the average age at which members of a given national team started playing football in organized way / joined football academies. It turns out that the representatives of Germany started playing the earliest – when they were on average less than 6 years old, and the representatives of Ukraine – at the age of over 11, the latest. The average age of starting practicing football in an organized way for all the players was just over 8 years old. The r-Pearson correlation coefficient between the age of EURO 2020 football players when they joined football academies and their value in the transfer market was calculated: $r = -0.19$; $N = 459$, $p < 0.001$. The correlation turned out to be statistically significant. That is, the younger the age a player joined the academy, the higher his value. Thus, it should be said that the age at which a football player begins organized training may be another factor that affects his later value. This is a factor that has not been widely described in scientific works to date.

In conclusion the study shows at what age professional athletes start to practice sport in an organized way – it is on average little more than 8 years old. Undoubtedly, this shows how demanding professional sport is and at what age a person needs to make the right decisions to be able to think about being a professional footballer. In other professions, a person can decide what he or she wants to do at work at high school or university, and in the case of professional sports, appropriate steps must be taken as early as in primary school or even later. These results also show to what extent parents decide about a sports career nowadays, because they have to transport these young boys to trainings for many years and support this process.

Time	Day 3 | Friday, 25 August 2023 | 9.00 – 10.00		
	17: GENDER | WW5 **Chair: *Vincent Hogan***	**18: FORECASTING & HISTORY | WW6** **Chair: *Robert Butler***	**Session 19: MOVEMENT & WELFARE | WW9** **Chair: *Brian Soebbing***
9.00	Strategic Decision Making Under Pressure: Evidence from Men's and Womens Cricket | ***Vincent Hogan* & *Pat Massey***	Cheering for your country: The prediction of attendance at international football games using Machine Learning techniques | ***Sören Dallmeyer, Simon Beermann* & *Christoph Breuer***	Who, When, and Why? Qualified Offers in Major League Baseball | ***Craig Depken* & *Steven Swidler***
9.30	In-Group Bias in Expert Evaluations? Evidence from Ski-Jumping Competitions | ***Bernd Frick* & *Katherina Moser***	A Comparison of the Performance of Elo Ratings and Machine Learning for Tennis Match Result Prediction | ***Rory Bunker, Calvin Yeung, Teo Susnjak, Chester Espie* & *Keisuke Fujii***	Pay Dispersion and Player Movement in the National Football League | ***Brian Soebbing, Yinle Huang, Nicholas Watanabe* & *Pamela Wicker***
10.00	Perceptions of Gender Bias and Participation in Irish Rowing | ***Declan Jordan, Marie Ryan, Maeve Buckley* & *Claire Lambe***	An Investigation for the Rise and Decline of Racecourses in Great Britain: Henry VIII to Charles III | ***Robert Butler* & *Eoin McLaughlin***	Playing an Amateur Sport in a Professional Context: Is Playing Gaelic Games Supportive of the Mental Wellbeing of Senior Inter-County Players? | ***Elish Kelly, Seamus McGuinness* & *Eoin Kenny***

17: GENDER | WW5: 9.00

Strategic Decision Making Under Pressure: Evidence from Men's and Womens Cricket. | *Vincent Hogan & Pat Massey*

We use a dataset from over 800 matches played over eight seasons to analyse decisions by cricket captains on whether to bat first or second in Australia's men's (BBL) and women's (WBBL) Big Bash cricket leagues. Gregory-Smith et al. (2019) note that decision making in cricket is particularly well suited to economic analysis and offers analogies to behaviour in wider microeconomic contexts. Sachetti et al. (2016) also state that batting order decision making provides a useful natural experiment of choice under uncertainty. Following the toss of a coin, the successful captain must choose between two alternatives not knowing what the subsequent outcome will be. Several studies have analysed decisions by team captains on whether to bowl or bat first in a match having won the toss across various cricket formats. Gregory-Smith et al. (2019) report that winning the toss appears to marginally increase teams' chances of success, although they note that the results vary according to the specific empirical setting. Jewell et al. (2022) find statistically weak evidence that an experimental rule change abolishing the mandatory pre-match toss in English County Championship (4-day) matches increased the extent to which the toss outcome could predict the match result. There is evidence of differences. De Silva & Swartz (1997) report differences in teams' preferences for batting first or second in one day internationals (ODIs) between 1990 and 1997. Australia chose to bat first 87% of the time when they won the toss whereas Sri Lanka chose to bat first only 36% of the time. Bhaskar (2009) finds strong evidence of sub-optimal decision making by team captains in T20 international matches in choosing to bat first even though this reduces the chances of winning. Sacheti et al. (2016) also found that team captains were more likely to bat first on winning the toss in T20 international matches despite evidence that batting first does not increase the chances of winning. This trend continued even as experience of playing T20 increased. Both these studies suggest that such sub-optimal behaviour stems from a widespread belief among media commentators that it is best to bat first, combined with a desire by captains' to avoid media criticism. Lohawala & Rahman (2018) cite instances of international team captains being heavily criticised when their team lost after they decided to bat second having won the toss. Depken et al. (2012) report a similar result from penalty shoot-outs in ice-hockey where home teams, who have the choice of shooting first or second, are more likely to shoot first despite evidence that this reduces the chances of winning. They attribute such decisions to manager risk aversion due to likely fan criticism if they shoot second and lose.

We follow Sachetti et al. (2016) and use a conditional logit model (controlling for match fixed effects) to model match winning as a function of team characteristics and the decision to bat first or second. We obtained data on the outcome of the toss, batting decisions and match results for all BBL and WBBL regular season matches played between 2015/16 and 2022/23 from the CRICINFO website www.cricinfo.com. This gives us a total dataset of 832 matches (384 BBL and 448 WBBL) over eight seasons. We estimated team win probabilities using betting odds data from the Odds Portal website as a proxy for relative team quality.

Our results show that there is a slight advantage to choosing to bat second. BBL and WBBL teams appear to be aware of this and both tend to choose to bowl first upon winning the toss. We find no significant difference between the behaviour of decision makers in BBL and WBBL. Thus the behaviour of teams in both leagues is consistent with rationality. Our findings differ from previous studies of batting decisions in T20 cricket such as Bhaskar (2009) and Sachetti et al. (2015), suggesting that decision makers learn over time. Evidence that there is some (slight) advantage in batting second is in contrast to Davis et al, who found that teams batting second in T20 matches wait too long to increase their level of batting aggressiveness, which again indicates that teams learn over time.

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17: GENDER | WW5: 9.30

In-Group Bias in Expert Evaluations? Evidence from Ski-Jumping Competitions | ***Bernd Frick & Katherina Moser***

Ski jumping competitions involve subjective evaluations by judges who are highly trained and, therefore, presumably neutral and impartial. While the existence of a nationalistic bias (i.e. judges assigning higher scores to athletes from their home country) has been documented in the literature already, a potential gender bias has not yet been identified. The aggregate performance of an athlete is determined by converting the jumping distance (an objective measure) and the style points (a subjective measure) into a summary measure. The jumping distance is quantified in intervals of 0.5 m. In addition, there is a subjective performance evaluation by a panel of five judges of both genders from five different countries. These judges award style points for the execution of the jump, landing, and outrun, based on predefined judging criteria. Each judge awards a score between 0 and 20 points, with intervals of 0.5. The lowest and highest scores are discarded to exclude extreme votes and the three remaining scores are summed up to the total style points, which are then added to the distance score.

The data covers nine consecutive seasons (2011 thru 2019) and includes 1,087 athletes performing nearly 360,000 jumps that were evaluated by 266 different judges and are analyzed using regression analyses

The estimation results suggest a “negative” in-group bias with female judges awarding more style points to male athletes and male judges awarding more style points to female athletes (all the coefficients are significantly different from each other). These findings are not in line with the traditional in-group bias paradigm but corroborate the findings reported in Depew et al. (2017) who find that black (white) juveniles who are randomly assigned to black (white) judges are more likely to get incarcerated (as opposed to being placed on probation), and to receive longer sentences. A likely explanation is the possibility that the style points awarded by judges to athletes of their own gender are optimal, while the points assigned to athletes of the opposite gender are generous, resulting in a “model pupil” effect. This is the case if judges are concerned about creating the impression of being prejudiced towards athletes who are of the opposite gender.

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17: GENDER | WW5: 10.00

Perceptions of Gender Bias and Participation in Irish Rowing | ***Declan Jordan & Marie Ryan, Maeve Buckley & Claire Lambe***

According to the 2019 Irish Sports Monitor, there is a noticeable gender disparity in Irish sport at all levels, including coaching, mentoring, and sport administration and governance. Based on original survey data, this paper assesses the degree to which Irish rowing club members perceive gender bias in their clubs and investigates the relationship between this and female rowers' participation in the sport. With 860 responses from rowing club members throughout Ireland, this study offers evidence of rowers' attitudes and opinions on the degree of bias in the recognition of female rowers' accomplishments, gender balance in resource allocation, and the inclusion of women in club leadership positions. The paper examines whether gender bias is reported by various cohorts and age groups within the clubs, as well as the degree to which female rowers, coaches, and club leaders feel valued by their rowing club and peers.

The paper is based on an quantitative data from an original online survey of 860 members of clubs affiliated to Rowing Ireland and qualitative data from a series of focus groups with rowers, coaches, volunteers, and administrators in a sample of clubs. The survey data comprises of responses from members of 83 different rowing clubs across the island of Ireland, from a total of 99 clubs affiliated to Rowing Ireland. Of the respondents that report their gender identity, 466 identify as women, 378 as men, and 6 as other/non-binary. The five focus groups from which qualitative data is gathered include groups of volunteers, athletes, committee members, female coaches, and one general 'town hall' meeting. The paper uses multinomial logit estimations to determine the likelihood of respondents reporting that they have witnessed gender bias in their clubs, and also to estimate the extent to which gender bias (along with other controlling variables) is associated with the likelihood of reporting an intention to participate in the club the following year. Robustness checks are conducted including principal components analysis to assess the extent to which individual and club characteristics are associated with variation in the likelihood of reported gender bias and participation. The quantitative results are considered in the context of qualitative data from the focus groups, which uses a thematic analysis approach.

The results show a significant difference in perceptions of gender bias between men and women in rowing. The findings reveal that perceptions change depending on variables such as the type, location, and age of the club, the nature of women's participation, and the individual characteristics of the club member. Findings also suggest a negative association between, on the one hand, perceptions of gender bias and perceptions that clubs undervalue women's contributions and, on the other hand, reported intentions to remain involved in the sport. The study informs sports bodies' efforts to identify barriers to women's participation in sport and sports governance and guide the development of policies and initiatives aimed at supporting female involvement in sport.

18: FORECASTING & HISTORY | WW6: 9.00

Cheering for your country: The prediction of attendance at international football games using Machine Learning techniques |*Sören Dallmeyer, Simon Beermann & Christoph Breuer*

Forecasting ticket demand at sporting events is crucial for clubs, leagues, and associations due to its impact on ticket revenues and brand-building efforts (McDonald, 2010; Oh et al., 2017). From an academic standpoint, ticket demand has been studied extensively since the seminal work of Rottenberg (1956). Thereby, the majority of the literature has focused on identifying determinants of stadium attendance. The studies resulted in an extensive list of factors. For instance, market size (Mirabile, 2015), matchday significance (Buraimo et al., 2018), team performance (Forrest & Simmons, 2006), stadium characteristics (Soebbing et al., 2023) and scheduling (García & Rodríguez, 2002) were found to influence the attendance demand for sporting competitions. A second, considerably smaller strain of the literature focuses on the actual prediction of attendance. In particular, with the emergence of machine learning algorithms, a few studies covering the major leagues in the United States (Mueller, 2020; Sahin & Ucar, 2022) have recently emerged. In general, the existing literature has primarily focused on national sports league competitions in the context of European football or North American sports (e.g., Pawlowski & Anders, 2012; Coates & Humphreys, 2012). Our study focuses on attendance at international games in European football and thereby aims to contribute to both streams of attendance research. Over the last few years, numerous federations have experienced a decline in attendance figures for international competitions outside the European Championship and the World Cup (Spiegel, 2020). Hence, new information on the determinants of attendance and prediction models and their accuracy would provide valuable new insights. Moreover, the context allows us to deal with some methodological challenges and limitations of previous attendance studies (Schreyer & Ansari, 2021). First, this study can address one of the key methodological concerns raised by Dobson et al. (2001), who described the influence of spectator groups on stadium attendance demand. International matches typically sell matchday tickets only, limiting or eliminating season ticket holders' influence on attendance. Second, usually on a club level, the home stadium is fixed. Many national teams, however, vary their home stadium, which represents a unique opportunity to study the effects of stadium characteristics on attendance. Furthermore, this study represents the inaugural attempt to examine attendance demand for international matches, providing an international perspective encompassing diverse nations and cultural contexts. Finally, the paper presents various statistical procedures to assess ticket demand, extending attendance prediction beyond conventional regression analysis and incorporating machine learning algorithms.

The utilized dataset includes n=1927 international UEFA matches between national teams between 2010 and 2020. The covered competitions are international friendly matches, UEFA nations league games, and European championship qualifiers. A large number of variables commonly used in the literature for estimating attendance demand are available. (e.g., Addesa & Bond, 2021; Bradbury, 2020; Ermakov & Krumer, 2022). Among others, the dataset includes different market characteristics (e.g., GDP, population), team-specific information (e.g., FIFA ranking, ELO rating, Market value), detailed information on the stadium, the distance between the two competing countries, and match-day-specific information such as game-day or kick-off time. Overall the data set includes 22 predictor variables. The total number of attendees and the stadium utilization (in %) are used as outcomes. In line with the existing literature, the study employs different regression models in order to investigate the determinants of stadium attendance at international competitions, such as OLS regressions (with and without logarithms of total attendance) and Tobit regression models. Concerning the second objective of predicting stadium attendance, different machine learning techniques (e.g., random forest, k-nearest neighbour, support vector machine,) were applied to the dataset. In the pre-processing stage, one-hot encoding was used to transform the categorical variables to numerical vectors, while numeric data was normalized using the Box-Cox transformation. This transformation was chosen to normalize skewed data distributions into more normal distributions. All machine learning operations were conducted using the mlr3 framework. During the machine learning operations, nested resampling was used for the hyperparameter optimization. In nested resampling, the outer loop divides the data into training and test sets, just like in a standard cross-validation procedure. However, in addition to evaluating the model on the test set, the outer loop also includes an inner loop that performs another round of cross-validation on the training data. The inner loop is used for selecting the best model or tuning hyperparameters. This process is repeated for each fold of the outer loop. The main advantage of nested resampling is that it provides a more reliable estimate of a model's performance on unseen data.
In order to evaluate and compare the performance of the models utilized in this study, several performance measures were computed. These measures consisted of the Mean Squared Error, Mean Absolute Percent Error, Root Mean Squared Error, and R Squared.

18: FORECASTING & HISTORY | WW6: 9.00

Cheering for your country: The prediction of attendance at international football games using Machine Learning techniques |*Sören Dallmeyer, Simon Beermann & Christoph Breuer*

The results of the employed regression models are mostly in line with existing studies on the national league level. For example, economic factors such as market size and product-related factors like matchday, and team strengths of home and away team have a significant effect on attendance. Furthermore, significant differences between the different competition formats are revealed. The results are robust for different specifications of the regression models. Preliminary results of the prediction models indicate that most of the used machine learning techniques provide forecasts with good predictive accuracy. However, the prediction performance does substantially differ when distinguishing between different competitions (e.g. friendly matches, qualifying matches). As a next step, we will employ fixed effects regression models in order to gain more insights on the role of stadium characteristics. Moreover, other machine learning operations such as artificial neural networks (ANN) or extreme gradient boosting (XGBOOST) will be added and compared to the previously used techniques.

18: FORECASTING & HISTORY | WW6: 9.30

A Comparison of the Performance of Elo Ratings and Machine Learning for Tennis Match Result Prediction | *Rory Bunker, Calvin Yeung, Teo Susnjak, Chester Espie & Keisuke Fujii*

Approaches for predicting match results in tennis include ratings, regression, points, paired comparison, and machine learning (ML) based models. Ratings-based methods use the difference in player ratings to identify the probable winner of a match, and these ratings are updated over time based on actual match results. ML models are trained on a specific number of matches and then tested on a previously unseen set of matches to confirm their generalizability. ML models fall into two categories: classification models and regression models, which aim to predict discrete (e.g., win/loss) and numeric (e.g., the margin-of-victory in terms of sets won) target variables, respectively. Kovalchik (2016) compared the predictive performance of several different models in predicting 2,395 ATP tennis matches in 2014 and found that Elo ratings performed better than regression-, points- and paired comparison-based models. Angelini et al. (2021) proposed the Weighted Elo (WElo) method and found that it outperformed paired comparisons, logistic and probit regression, and standard Elo on a dataset of over 60,000 WTA and ATP matches. Although regression models, traditionally thought of as statistical techniques, are often also considered ML techniques, it has not been established whether Elo ratings-based methods can outperform other commonly-used models from ML, e.g., those used in a recent study by Wilkens (2021): boosted trees, random forests (RFs), support vector machines (SVMs), and artificial neural networks (ANNs). In this study, we apply both types of methods to the same ATP men's tennis dataset used by Angelini et al. (2021) and conduct a comparative evaluation of their performance. As the boosting model, we employ Alternating Decision Trees (ADTrees), which possess the accuracy-increasing benefits of boosting while retaining an interpretable decision tree structure.

Due to the structure of the data used for the Elo and WElo calculations in the initial data, it needed to be transformed to apply the ML models. The player order was arranged whereby columns player 1 ``P1" and ``P2" were created for each match, where P1 is the first player in terms of alphabetical order based on their surname (unlike the original data, which had ``winner" and ``loser" columns). The target variable was defined as the result from player 2's perspective (P2 result), i.e., whether player 2 won or lost against player 1. Some features for ML were then created such that they are in terms of differences between player 1 and player 2 (player 1 - player 2). Since our purpose is to predict the results of matches, and we are not attempting to generate profitable betting strategies to ``beat the house", we included betting odds as a predictor. Several ranking and ATP points features were also engineered: the absolute differences in the ATP points and rankings, the percentage differences, and the differences normalized to be between -1 and 1. Only external (not in-play) features were used to predict the target variable. Five feature selection methods: correlation, chi-squared, information gain ratio, ReliefF, and symmetrical uncertainty, were applied to the remaining features, and their average rank was taken.

Only non-redundant features with the highest ranks were retained, e.g., average odds difference incorporates Bet365 odds as one of the companies the average is taken over and the former was preferred as it had the higher rank. Similarly, only the ATP points difference normalized to be between -1 and 1 (PtsDiffNorm) was retained, since it has the highest average rank among PtsDiff, RankDiff, PtsDiffPerc, RankDiffPerc, PtsDiffNorm, and RankDiffNorm. The final set of features used in the ML models was: the average betting odds difference (across different betting odds companies), whether player 1 was seeded, player 1's entry (e.g., qualifier or not), whether P1 and P2 play with the same hand as P1, the players' difference in height, whether the players are from the same country, their difference in age, and the ATP competition points difference — normalized to be between 0 and 1. All ML models were applied in WEKA 3.9.6 with their default parameters and the WElo R package was used for Elo and WElo. The first complete year of data, 2006, was chosen as the initial training set (anchor year), and one year was incrementally added to this training set to predict the following year's matches (i.e., train on 2006/test on 2006, trained on 2006-2007/test on 2008, ..., train on 2006-2019/test on 2020, so a total of 14 training-test splits).

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A Comparison of the Performance of Elo Ratings and Machine Learning for Tennis Match Result Prediction | ***Rory Bunker, Calvin Yeung, Teo Susnjak, Chester Espie & Keisuke Fujii***

Betting odds differences were found to be the most predictive model variables, followed by the players' ATP points and rankings differences. The accuracies of the ML models and Elo/WElo for the 14 training-test splits were obtained as well as the test set predictions derived purely from the betting odds, i.e., (if the average odds difference is less than 0, then player 2 loses, otherwise player 2 wins). The obtained results showed that ADTree achieved the highest accuracy in seven of the 14 test sets. Model-free betting odds predictions achieved the best accuracy in six of the 14 test sets. Across the 14 test sets, the average betting odds difference achieved 70.4% average accuracy, followed closely by ADTrees (69.8%) and Logistic Regression (69.5%). Elo and WElo both achieved 67.5% on average, slightly higher than ANN, SVM, and Random Forest, which achieved an average of 67.0,% 67.3,% and 66.9% accuracy across the 14 test sets. The betting odds and ADTree achieved the joint-highest accuracy performance across all test sets (72.7%). Our results are broadly consistent with past studies (e.g., Wilkens, 2021), which found that regardless of the features, models and approaches used, accuracy generally reaches around 70%, similar to bookmaker odds alone (i.e., the most relevant information is contained in betting markets). Through analysing the differences in accuracy between each of the ML models and Elo/WElo, we found that, unlike ANN, SVM and Random Forest, ADTree and Logistic Regression outperformed both Elo and WElo in all training-test splits. The respective average differences in accuracy between the ML models and Elo/WElo across all training-test splits were 2.3% and 2.0% for ADTree and Logistic Regression. One-branch ADTrees achieved the same performance in terms of accuracy as the ten-branch ADTrees (10 was the default parameter in WEKA) in most test sets, suggesting that larger trees did not generally lead to significantly better performance. The differences in accuracy between the ML models and betting odds-derived predictions showed that ADTree and Logistic Regression performed comparably to betting odds-derived predictions; however, ANN, SVM, Random Forest, as well as Elo and WElo, performed worse than betting odds. In future work, hyper-parameter tuning and incorporating aggregated or averaged historical in-play (derived from events within matches) features may improve ML model performance, more models could be added to the comparison (e.g., CatBoost), and WElo could be extended to consider more match history than just the player's most recent match.

18: FORECASTING & HISTORY | WW6: 10.00

An Investigation for the Rise and Decline of Racecourses in Great Britain: Henry VIII to Charles III | *Robert Butler & Eoin McLaughlin*

This paper explores the evolution of racecourses in Great Britain over the past 500 years – from King Henry VIII to the reigning monarch King Charles III – and sheds light on a sport and industry that has experienced a clear rise and decline over the past half millennium. From the middle of the 17th century horse racing in Britain began to explode in popularity. The number of new racecourses dramatically increased during the 18th century, peaking in the mid-19th century at nearly 400 locations. However, a rapid decline then ensued, with swathes of closures throughout the late 19th century and early 20th century. Various economic reasons can explain the trajectory of the sport of horse racing, with the transport revolution and industrialisation of Britain responsible for both a decline in the number of active courses and rise in popularity of mass field sports.

We extract data from Greyhound Derby to understand the rise and decline of British horse racing. The dataset includes: 510 years of observations from 1512 to present. 732 racecourse openings. GPS coordinates from each location are then collated using www.maps.ie to identify the location of all 732 racecourses. Railway station data is taken from the UK Data Service for 1851, 1861 and 1881.

In 1750 the Jockey Club was founded in London. Codification of the formal institutions of the sport – namely the rules of racing – were developed for Nonmarket Racecourse so that all "races on Nonmarket heath were run fairly" (Jockey Club, 2022). The Rule of Racing were born, with the Jockey Club responsible for oversight and upkeep. Ironically, codification did not see a rise in popularity but a decline. From the mid-1840s, Great British racing went into terminal decline despite in1840 the Public General Act, 3 & 4 Victoria I, c. 5 repelling "An Act to restrain and prevent the excessive Increase of Horse Races." Other casual factors are captured by Allen (2009) who plots what was happened in England around this time had explore how the Industrial Revolution was changing the face of British society with real wages in England rose faster than real output per person (Clark, 2007). Broadberry et al. (2015) and Hodgson (2022) illustrate the significant sectoral shift in Britain at this time with further exasperated the closure of tracks.

19: MOVEMENT & WELFARE | WW9: 9.00

Who, When, and Why? Qualified Offers in Major League Baseball | ***Craig Depken*** **&** ***Steven Swidler***

Qualified Offers, take-it-or-leave-it offers by Major League Baseball teams to potential free-agent players of a one-year contract valued at the average of the top 125 paid players in the league, began in 2012 and continue through the 2022 season. Qualifying offers have costs and benefits for the team and the player alike, including compensatory draft picks for the team if the player is signed by another team or certainty about the player's cost if the qualifying offering is accepted. Players face uncertainty about their future market value and ability to sign with another team but also face the benefit of a guaranteed one-year salary playing with the offering team. However, through the 2022 season, 124 players have received qualifying offers but only 13 have chosen to accept their offer. Until now, academic studies have mainly focused on the legal issues surrounding qualified offers in the collective bargaining agreement. This paper investigates who receives a qualifying offer, when in their career they are more likely to receive a qualifying offer, and why certain players are given qualifying offers. We further analyze the decision to accept or reject a qualified offer and whether post-offer performance of players differs across decisions.

We anticipate finding that teams make qualified offers in a defensive posture, that is, in an attempt to keep a player without paying more than the qualifying offer on an annual basis. We also anticipate that players turn down qualified offers because they are confident they can sign with another team for equal or more money.

19: MOVEMENT & WELFARE | WW9: 9.30

Pay Dispersion and Player Movement in the National Football League | ***Brian Soebbing, Yinle Huang, Nicholas Watanabe & Pamela Wicker***

For an organization, one of the key decisions is how to structure payroll. Throughout the academic literature, numerous theories have looked at payroll structure and its influence on organizational outcomes (Gupta et al., 2012). Due to the unique nature of sport, particularly professional sport (Kahn, 2000), a rich stream of literature has developed looking at team payroll dispersion and organizational outcomes (Shaw, 2014). Shaw (2014) defined pay dispersion "as differences in pay levels between individuals within (i.e., horizontal or lateral dispersion) and across (i.e., vertical dispersion) jobs or organizational levels" (p. 522). Most of the literature looking at pay dispersion focused on its effect on organizational performance (see Shaw (2014) for a survey). Prior literature incorporates three main theories: tournament, equity, and expectancy. Within these theories, the focus is on comparing competing philosophies examining dispersed versus compressed payroll. The literature examining payroll dispersion in sports shows mixed results in terms of payroll dispersion and organizational performance (e.g., Franck & Nüesch, 2011; Mondello & Maxcy, 2009). Mondello and Maxcy (2009) examined how pay dispersion impacted team revenues and winning percentage. Controlling for average pay levels and bonus payments, these authors found that pay dispersion among team members was negatively associated with winning percentage, but positively related to the revenue generated by the franchises. Berri and Jewell (2004) and Katayama and Nuch (2011) examined pay dispersion through performance relationships among teams in the US National Basketball Association (NBA). Both studies found that the relationship between inequality measures and team performance was negative, but insignificant. Franck and Nüesch (2011) attempted to address this issue directly in a study of professional soccer (world football) teams. Their results indicated team performance was highest when pay dispersion was either low (compressed) or high. They also attempted to analyze whether pay dispersion had an effect on playing style. Controlling for team characteristics, coaching style, and talent, these authors found that higher pay dispersion was positively associated with the number of individualistic plays (individual runs and dribbles), but not significantly related to the number of cooperative plays (e.g., cross-field passes). From this research stream, scholars attempted to better identify characteristics of payroll dispersion. Trevor et al. (2012), for example, looked at the performance relationship between explained and unexplained pay dispersion among National Hockey League (NHL) teams. Their results suggested pay dispersion could be explained by differences in player input and talent and was positively related to team performance, but unexplained variation was not significantly related to performance. One omission of previous research is the ability to identify and control for individual-level inputs. As Shaw (2014) writes, how individuals react to dispersed and compressed pay while controlling for individual inputs would significantly move the literature forward. The present study begins to accomplish this call by analyzing the effects of pay dispersion on player movements in the National Football League (NFL) from one season to another season using a sample period from the 2000-2001 season through the 2021-2022 season.

To examine the impact of payroll dispersion on player movement, we collected data on player movement, player wages, and other team and player characteristics from the 2000-2001 season through the 2021-2022 season. The unit of observation is a player-season. The dependent variable in the present study is Move, which is equal to 1 if the player changed teams after the season. In order to determine who changed teams after the season, we collect information on NFL player transactions. Our main source of transactions is the Pro Football Reference website. Once this information is collected, we looked at ESPN.com and NFL.com to confirm that Pro Football Reference had a complete list of transactions. There was a total of 67,168 transactions. These transactions will be separated into movement that occurred between seasons versus within season. The main variable of interest is Dispersion, which measures the payroll dispersion of the player's team in the observed season. We retrieve player salaries from two main sources, the USA Today player salary database and Spotrac. In the proposed research, we examine the dispersion of a player's salary cap value. We use salary cap value because this measure is consistent both in terms of its appearance in the multiple data sets. Consistent with Trevor et al. (2012), we separate pay dispersion into its explained and unexplained components. The rest of the explanatory variables look at various team and player factors. Winpct is the final regular season winning percentage for the observed player's team. TmSalRnk is where the player ranks in terms of cap value for the observed season on his team. Perf measures a player's individual performance using Pro Football Reference's Annual Value measure. Age and its squared term measure a player's human capital and was obtained from Pro Football Reference. Undrafted is a dummy variable equal to 1 if the player was not selected in the NFL Amateur Draft. Crime is the number of off-field incidents with the law a player was involved in during the prior year. These data were obtained from a number of websites including ESPN.com, Pro Football Arrests, and the San Diego Union Tribune. OnField is the number of on-field incidents a player was involved in that received attention from the league office. This number was obtained from the NFL Fines database. The next five variables are positional dummies with the reference group being defensive lineman. Due to the dependent variable being a dichotomous variable, we will estimate a logistic regression model. In this estimation, we will cluster the standard errors by player.

19: MOVEMENT & WELFARE | WW9: 9.30

Pay Dispersion and Player Movement in the National Football League | ***Brian Soebbing, Yinle Huang, Nicholas Watanabe & Pamela Wicker***

At the time of writing, the preparation and cleaning of the data is still ongoing. Overall, the anticipated findings in the proposed study contribute to the literature examining payroll dispersion and employee movement. While previous research looking at payroll dispersion mainly looks at organizational performance measures, the proposed study contributes to a small, but growing body of literature focusing on other organizational or individual factors related to payroll dispersion. The anticipated results hope to provide further insight into understanding how pay dispersion in one organization may affect the likelihood of an individual moving to another organization. Further, the anticipated results answers an earlier call from Shaw (2014) stating that there is a need to understand individuals' reaction in environments with compressed or dispersed pay. In addition to Shaw's (2014) call, the proposed research also contributes to an increasing body of research exploring the impacts of explained and unexplained pay dispersion which the literature continues to examine (e.g., Debrock et al., 2004; Simmons & Berri, 2011; Trevor et al., 2012). The proposed research is not without its limitation. The first area is the measurement of additional individual factors such as race, and the number of previous between season movements of the player, and the current contract status of the player. The final area is the type of transactions. The present research considered all movement the same. While some movements may be the choice of the player (e.g., free agent), others may not be. For example, a player may move between seasons as he was cut by the team at the end of the season or during a training camp, which necessitates the move. Thus, we will look to try and separate transactions by type of movement to get a better indication of how payroll dispersion might impact decision making.

19: MOVEMENT & WELFARE | WW9: 10.00

Playing an Amateur Sport in a Professional Context: Is Playing Gaelic Games Supportive of the Mental Wellbeing of Senior Inter-County Players? | *Elish Kelly, Seamus McGuinness & Eoin Kenny*

Gaelic games are traditional Irish amateur sports, two of which are Gaelic football and hurling. Although the sports are amateur, the advances that have taken place in the games over the past decade have increased the commitments required of players, particularly those playing at senior inter-county level, the highest level that the games are played. The evolutions that have taken place have given rise to concerns that the demands that the modern games are placing on players are having negative effects on their lives, including their mental wellbeing. Sport is now a well-known factor in preventing stress, depression, and anxiety, and is often prescribed by doctors to deal with common mental disorders (CMDs). However, there is a growing awareness in the applied sports psychology and sports medicine literature of the psychological well-being of elite athletes (Markser, 2011), and that practising sport at a high level can give rise to anxiety, depression, and other mental health difficulties (Schaal et al., 2011).

Using survey data captured from senior inter-county Gaelic footballers and hurlers in 2016, this paper contributes to the literature in this area by examining the impact that playing an amateur sport in a professional context can have on players' mental wellbeing. The paper focusses specifically on identifying the effects that their time and other sports-related commitments, along with their sports environment, can have on their mental health. The methodologies used in the paper account for biases related to non-random selection and measures the sensitivity of the estimates to unobserved heterogeneity.