What are the effects of Covid- 19 on professional football?

**An analysis of the influences of “ghost games” on home advantage and subsequent price setting behaviour in betting markets**

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# Introduction

## Problem Indication

1: PRACTICAL PROBLEM/PHENOMENON:

Football is the most popular sport in the world with millions of players across the Globe. According to a study conducted by FIFA in 2006, the amount of active football players was 265 million(FIFA 2007). In other words, roughly 4 percent of total world population at that time was regularly playing football. The amount of fans is even more staggering, with 3.5 billion people tuning in for the FIFA World Cup Final in 2018 between France and Croatia(FIFA, 2019) for example.

Global social distancing measures following the Covid-19 pandemic introduced the phenomenon “Ghost Matches” in the football world. So called “Ghost Matches” are football matches without any spectators attending. Past research such as(…) indicate how crowd support significantly influences match outcome in Sports.

2: WHY TO STUDY IT:

Questions such as: is home advantage still present in games without a crowd and whether referee behaviour is different without fans will aid in grasping the effect of home supporters on the outcome of football matches.

3: WHAT WE KNOW: Due to its popularity, an abundant base of research on football and each of its aspects currently exists. The same holds for the possible advantage of the team playing at home, with several papers trying to disentangle the dynamics at play that could lead to home advantage. (e.g. Boyko, R. H., Boyko, A. R., & Boyko, M. G. (2007), Pollard & Polla[rd, 2005](https://shapeamerica.tandfonline.com/doi/full/10.1080/02640410601038576?scroll=top&needAccess=true)). Does the crowd raise home team performance, or is the performance of away teams significantly lower in hostile environments. Additionally, (Neville and Holder, 1999 and Bokyo 2007) find that crowds could influence referee decisions subconsciously in favor of the home team. (Endrich, M., & Gesche, T.,2020) quantify this in their paper where they find that away teams on average receive 0.3 cards less and home teams 0.5 cards more per match when there are no spectators.

4: WHAT WE DON’T KNOW

However, the impact of “ghost games” is not limited solely to the pitch. The uncertainty surrounding the effect of “ghost games” on football results increases the unpredictability of match outcomes(…). One industry that heavily relies on these pre-game predictions is the sports Betting Industry(…). Bookmaker odds can be viewed as the price set by bookmakers in order to remain profitable as a business(..).

Opening odds Betting are set by bookmakers based on advanced statistics and predictive techniques to reflect the true probabilities of the event as much as possible(..). To “balance the books” , bookmakers apply a margin on the odds they present to ascertain their profits regardless of the actual outcome.(..) This means in practice that odds are lower than the “fair” odds or probabilities. The size of the margin applied to the odds determines the type of bookmaker and is its main pricing tool to exert control on profits. So called sharp bookmakers impose a lower margin on their odds to increase betting volumes whereas the “soft” bookmakers apply higher margins but consequently have lower betting volumes as the odds are less attractive for the bettor(…). Comparing the odds data for ghost ghames with the odds for previous seasons is crucial to determine whether bookmakers significantly altered their pricing strategy following the increased uncertainty.

The current extraordinary circumstances thus provide a special occasion to increase our understanding of the dynamics of crowd support player and referee performance. Furthermore, the covid-19 pandemic could aid our knowledge on bookmaker reactions to unfamiliar circumstances and unexpected shocks.

## Research Questions

This natural experiment translates into the following research questions:

* + 1. What is the effect of the exclusion of home supporters on home advantage?
    2. To what extent is referee behaviour shaped by the home crowd?
    3. What are the implications of “ghost games” on price setting behaviour of bookmakers?

## Research Approach

Providing legitimate answers to the aforementioned research questions requires a combination of theoretical and empirical analysis. Firstly, by analyzing the current and historical literature it is possible to obtain information on influential moderators in the relationship between crowd attendance and team performance. These moderators will then be included into the final dataset to improve robustness of empirical outcomes. The data on football matches allows for both a country level analysis and a aggregate analysis.

Historical data on football matches and odds data for the 11 main football leagues is available starting from the year 2000 until the latest season 2020/2021. The datasets are automatically updated every week to provide recent and accurate data. These datasets are then combined with data from Fivethirtyeight to incorporate expected goals and team strength moderation into the analysis. After data collection and construction of the final datasets a regression is performed in order to draw valid conclusions on the existence of home advantage from the data. Afterwards, a time-series-forecast model will be developed to assess what the predicted margins for bookmakers would have been under normal circumstances based on the historic developments of the margins. These predicted margins will then be compared with the actual bookmaker margins during the “ghost games” to see whether or not a significant difference between the actual and predicted values prevails.

## Academic Relevance

As mentioned in previous sections Several studies such as (…;….) compare bookmaker pricing to asset pricing in capital markets. A thorough understanding of

The batch of matches without fans provides an unique opportunity to delve deeper in the impact of crowds on football matches since there is an abundance in new data for matches played without crowds. Comparing the scores and detailed statistics of matches played across Europe pre and post covid may serve as a baseline model for the effect of crowds on home team advantage.

## Managerial Relevance

Sports Betting is heavily on the rise (Markham, F., & Young, M. 2015). In the Market research report on the gambling industry(Online Gambling Market - Global Outlook and Forecast 2018-2023) a projected growth rate of around 10 percent per year is reported.

Correspondingly, more and more countries across the globe now have legalized sports betting completely( Rodríguez, P., Humphreys, B. R., & Simmons, R. (Eds.). 2017) Partly due to its sheer size, the influence of the gambling industry on football and society is growing steadily. (Sharman, S. (2020). In the Premier League of 2017/18 for example, 9 out of 20 clubs featured a bookmaker prominently as kit sponsor, while tv broadcasters established profound partnerships with bookmakers.

## Structure of Thesis

In this paper I will adhere to a 5 chapter structure to format the research. This first chapter serves as a background chapter for the rest of the thesis in which I outlined the concept to be researched in combination with the academic and managerial relevance of the concept. In the second chapter I construct the theoretical framework that will represent the basis of the empirical analysis in the later sections . In chapter 3, having laid out the theoretical framework, I thoroughly describe the method of analysis required to attain the desired results to allow for insight into the research technique deployed. In the fourth chapter I summarize the analysis and findings of the research in order to answer the empirical questions. Finally, in the fifth chapter, I generate conclusions and recommendations based on the findings of the study. Additionally, I discuss the limitations of this study and provide a guideline for possible future research in this area.