ERASMUS UNIVERSITY ROTTERDAM

ERASMUS SCHOOL OF ECONOMICS

Master Thesis Strategy Economics

From Pitch to Payout: The Impact of Premier League Gambling Sponsorship on Regional Gambling Activity

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1. Introduction

In recent decades, gambling companies have increased their presence in the football industry by sponsoring clubs and associations. The United Kingdom is one example of a country where sports have been inextricably linked with gambling promotion. Looking at the Premier League (PL), gambling corporations have started being the main jersey sponsors of clubs since the 2001/2002 season (Bunn et al., 2019). Figure 1 shows the number of gambling companies as shirt sponsors in the PL per season and indicates that the visual presence of these betting companies has grown over the past years. Next to shirt sponsoring, clubs have other types of partnerships with gambling firms. At the start of the 2021/2022 season, only one team did not have any connection with a betting firm (Camilleri, 2024).

Figure 1: Number of Gambling Shirt Sponsors in the PL per season
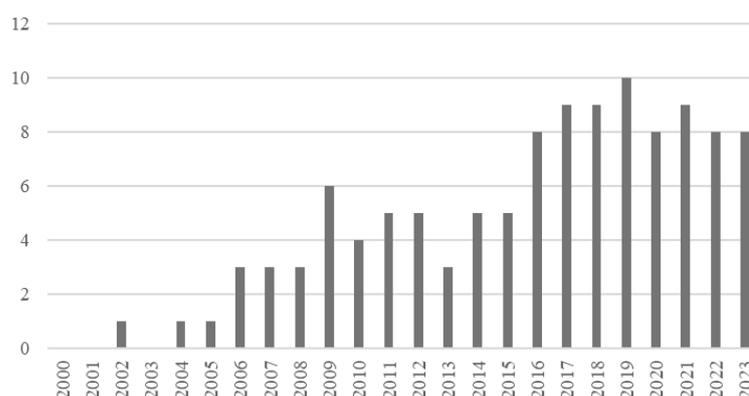
Notes: The figure shows the number of Premier League clubs with a gambling company as the main jersey sponsor across several football seasons. Information about the specific shirt sponsors was gathered through several sources included in Appendix A.

Football is one of the most popular sports in the world. In Europe alone, the industry generates around 25 billion euros and is watched by 3,2 billion people (Manoli & Andrew, 2018). The PL is the highest national football league in England and is known for its competitive character and global influence (Figueiredo, 2023). This led to worries about the potential harm that gambling companies' involvement in this sport could do to the public. The main concern is that it increases gambling activity, problem gambling, and illegal gambling. There is evidence that a rise in problem gambling is linked to both financial and mental health problems. There aren't many studies that have empirically addressed the influence of gambling advertisements in sports, so further research is required to determine how these

factors are related. As a result, I investigate the following research question in the context of gambling sponsorships in the PL:

Are gambling rates higher in regions with a premier league club with a gambling company as a shirt sponsor than in regions with a premier league club without a gambling company as a shirt sponsor?

From a societal perspective, this study addresses worries expressed by several institutions, including CARE and GambleAware, over the possible harm to the people of the United Kingdom (CARE, 2023; University of Bristol, 2023). This study aims to confirm whether gambling sponsorship in the PL is a contributing factor to the 1.4 million individuals addicted to gambling in the UK (Pacinella, 2023). Economically, this study contributes to our understanding of the effectiveness of (gambling) marketing and how it influences consumer behaviour.

Academics have shown that gambling has a negative influence on individuals, communities, and societies affecting psychological well-being (McCarthy et al., 2022; Latvala et al., 2019). An increase in gambling rates puts more strain on public health facilities, leads to an increase in unlawful betting, weakens community bonds, and increases the number of people harmed by problem gamblers. If gambling sponsorship of jerseys in the PL is significantly increasing gambling, it could be a reason for governmental institutions to intervene.

Even though many researchers express their concerns about the influence of gambling advertisements, there hasn't been any direct quantitative research on how gambling sponsorships from football affect gambling rates locally in the United Kingdom. This research therefore contributes to the academic knowledge on gambling advertisement in sports in two ways; quantitatively researching the relations between shirt sponsorship by gambling companies in football and gambling rates specifically, and doing this on a local level in the United Kingdom. I do this by analyzing repeated cross-sectional datasets that include variables on gambling behaviour, personal information, and shirt sponsors of PL clubs.

This study first examines recent changes in gambling behaviour and researches trends in gambling activity in the UK. Next, I investigate the relationship between gambling sponsorship of PL jerseys and gambling rates in the United Kingdom. Additionally, I further research the effects across demographics and verify if specific groups may be more impacted than others by this type of sponsorship.

The findings do not show a significant effect of jersey sponsorship by gambling companies on gambling activity. Additional analysis does not provide evidence that there is an effect across several demographics. A robustness check validates that there is no clear relation between the gambling advertisement on PL shirts and gambling rates.

The first section of the paper covers the literature that is currently available on the subjects of gambling behaviour, sports advertisements, and their connections. In the same section, I identify gaps in the current academic knowledge and formulate testable hypotheses. I then go into further detail regarding the changes that have occurred in the UK gambling market and how they relate to football. Subsequently, I provide an overview of the datasets used to analyze the research question, while providing general statistics about gambling activity in the UK. Next, I elaborate on the research method, a TWFE approach, and the specific models I use for the research. After that, I present the results, including a robustness check. Subsequently, I discuss the implications of the findings and how they relate to the current academic knowledge. Finally, I conclude by providing an overview of the research and propose directions for future research.

2. Gambling and Sports

2.1 History of the Gambling Industry in the UK and its Relations to Professional Football

The gambling industry in the UK has dramatically been developing in the last two decades. Alteration of the regulatory environment, technological innovations, and its growing presence in professional sports, with a focus on the PL, have let the industry grow.

One of the primary causes of betting cooperations' success in expanding is the 2005 Gambling Act. This legislation aimed at modernizing the regulatory landscape around gambling, while ensuring a fair gambling environment, which also would protect vulnerable groups in the population. Together with the act, the UK Gambling Commission was established, which became responsible for overseeing all betting activities (Gambling Commission, 2020). On the other side, the act enhanced the freedom of betting organizations to offer various sorts of gambling in different kinds of environments. Additionally, it permitted the industry to start advertising its products on all possible media channels, including social media (Jones et al., 2019).

During the start of the 21st century, the PL developed into one of the most lucrative football competitions and attracted global interest. Betting companies saw commercial opportunities within the professional football market, resulting in an increasing number of partnerships (Bunn, 2019). These partnerships came in all sorts of forms like jersey sponsorship, billboard sponsors during matches, logo visualization during interviews, and more.

In the 2010s the gambling market evolved even more rapidly. Technological advancements such as mobile gambling applications and live betting possibilities during sports matches altered the user's experience, which increased gambling frequency (Gainsbury et al., 2015). Given these developments, the industry grew to a 14 billion pound market in the UK alone, a 65% growth since 2008 (Davies, 2017).

Around the same period, PL teams strengthened their partnerships with gaming companies, raising ethical debates on the possible impacts of gambling brands' visual presence on vulnerable groups (Cassidy, 2014). Figure 2 demonstrates how the number of clubs supported by gambling businesses has grown throughout different regions, particularly in the South West and London/South East there has been a clear rise. Furthermore, it shows that the number of gambling shirt sponsors varies over time and by area. This may be the result of clubs being demoted or promoted, as well as the dissolution or formation of a new partnership between clubs and (betting) firms. For this particular kind of advertisement, gambling companies spend large sums of money; the precise sponsor payments for the 2016–17 season are listed in Appendix D.

Figure 2: Number of Gambling Shirt Sponsors in the PL per Region per Season
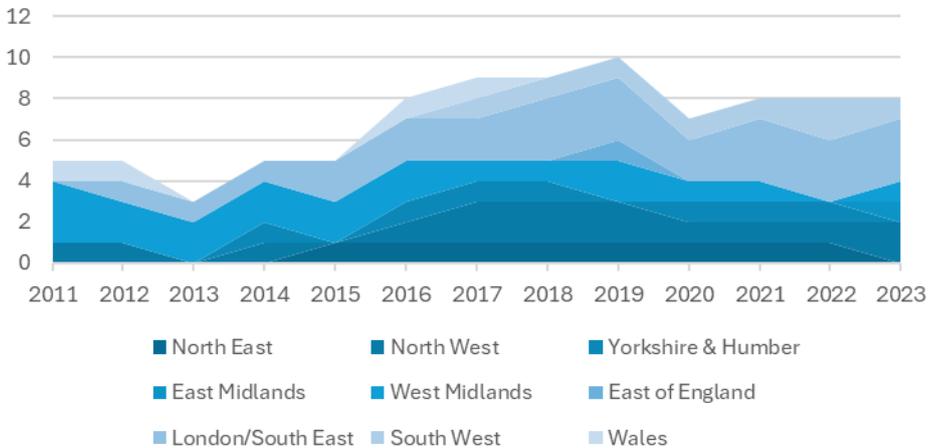
Notes: The figure shows the cumulative number of Premier League clubs with a gambling company as the main jersey sponsor per region across several football seasons. The regions are based on the different categories in the Young People and Gambling Survey dataset. Information about the specific shirt sponsors was gathered through several sources included in Appendix A.

Gambling advertising has been discussed by politicians in the UK constantly. Several reports like the government white paper *"High Stakes: Gambling Reform for the Digital Age"* (Department for Culture, Media, and Sport, 2023) have shown the increased presence of gambling cooperation and confirmed the effect it could have on vulnerable groups like children and problem gamblers. Therefore, the government has taken steps to regulate the industry more strictly but left out the advertising part almost entirely (Davies, 2024).

Even the PL and the clubs have been concerned about the role they play in the promotion of gambling. The PL itself started supporting responsible gambling initiatives and aims to increase awareness about the risks of gambling participation (BeSoccer, 2023). In addition, PL clubs have collectively decided to ban gambling companies as main shirt sponsors from the 2026-2027 season onwards, although these partnerships have financially been very rewarding for them (Barber, 2023). This may seem like a big decision, but it's important to remember that gambling enterprises can still have a partnership with the clubs and continue to have an impact on the population in other forms.

2.2 Influence of Gambling Sponsorship in Sports on Gambling Activity

Gambling sponsorships have become more common as a result of sports commercialization. Multiple studies have revealed that during football television shows, gambling commercials and gambling companies' logos are frequently displayed (Purves et al., 2020; Cassidy & Ovenden, 2017). Concerns are raised by this trend regarding the possible effects on gambling behaviour in the areas where these clubs are located (Jones et al., 2019). Some specific groups of the population might even be more influenced by the direct presence of these companies, like children (Djohari et al., 2020).

There is a call for empirical research to estimate the effect of this type of sponsorship (McKelvey, 2004; Lamont et al., 2011). Some researchers attempted to approach the matter in such a manner. Hing et al. (2014) conducted a study which is most relatable to this research. Their study explores whether exposure to gambling promotions during sports broadcasts increases gambling intentions. The authors refer to the Theory of Reasoned Actions to explain their choice for using gambling intentions, which in this context is referred to as the best predictor for actual behaviour. Unlike this research, they did not use actual gambling rates among the observed individuals. They conclude that there is a relation between exposure to gambling advertising during sports broadcasts and gambling intentions, although no causal

relation is found. The authors stress the need for additional research to further understand the dynamics between gambling promotions in sports and gambling activity.

Other studies have investigated the relationship between betting promotions through sports gambling and problem gambling with a qualitative approach (Lamont et al., 2016; Thomas et al., 2016). Their results indicate that betting advertisements in sports are likely to influence gambling activity. Additionally, researchers surveyed university students to examine the influence of gambling promotions during sports broadcasts on their gambling intentions (Hing et al, 2013; Hing et al, 2014). The findings suggest that exposure to this type of betting promotion might encourage the intention to participate in gambling activities. Again, these studies do not use actual gambling data, but take gambling intentions as a proxy.

Given the largely debated relation between gambling advertisements in sports and gambling behaviour, but on the other hand the small availability of empirical evidence, this paper researches the relationship between gambling advertisements in football and betting activities, in the specific context of gambling jersey sponsors in the PL.

Hypothesis 1*: The Presence of a Premier League Club with a Gambling Company as a Jersey Sponsor Increases Gambling Activity in the same Region.*

Studies show that men are typically more prone than women to engage in gambling activities. Men are also much more likely than women to experience gambling-related difficulties (Wardle et al., 2011). Given that men are the primary target market for gambling organizations, exposure to gambling sponsorships and advertisements associated with their favourite football teams may increase this risk (Thomas et al., 2012). The presence of gambling logos on club jerseys and other promotional items may encourage larger numbers of male fans in the same geographical areas to gamble. I, therefore, research whether the effect stated in Hypothesis 1 is stronger for men compared to women.

Gambling rates differ by age group, and gambling advertisements may have varying degrees of influence on different age groups. Clemens et al. (2016) found that betting advertising is positively related to gambling activity and problematic betting among young individuals. On the other hand, gambling rates among the elderly are also rising (Levens et al., 2005). This age group is vulnerable to problematic gambling due to risk-specific conditions such as inactivity, declining health, and isolation (Roser Granero et al., 2019). All of these factors could enhance the impact that gambling advertising has on them. Given the unclear

pattern of gambling behaviour among different age groups, I investigate how this discussion relates to the context of this research.

Furthermore, an individual's gambling incentive is also influenced by their level of education. A lower level of education is linked to increased rates of participation in gambling. Research indicates that those with less education are more susceptible to the negative effects of gambling because they lack awareness and critical thinking abilities (Langham et al., 2016). This group may be more impacted by the prominent gambling promotions in areas where gambling corporations sponsor PL teams, which could result in increased gambling rates. Therefore, I research whether the effect of gambling jersey sponsors varies across different educational levels.

Next to overall gambling, some authors point out that the presence of gambling advertisements can also influence specific types of gambling. Lamont et al. (2011) argue that increased betting on football games can result from the normalizing of gambling through sports. Football and gambling go hand in hand, and as a result, betting on games is accepted and even encouraged in some settings. Additionally, areas with a significant presence of betting advertising are likely to have higher rates of private gambling, for instance, casual betting amongst friends. According to Gainsbury et al. (2016), there is a positive correlation between higher rates of private gambling and increasing exposure to gambling advertising through sports sponsorships. People are more likely to participate in less regulated and more accessible private gambling activities when gambling logos and promotions are constantly present. To gain more insights into the influence of gambling sport sponsorship on specific types of gambling, I explore the influence of gambling jersey sponsors on specific gambling rates, football betting and private betting.

2.3 Influence of Gambling Sponsorship in Sports on Minors

Children and teenagers are especially susceptible to the effects of advertising. Advertising related to gambling has a notable effect on the attitudes and behaviours of youth toward gambling (Pitt et al., 2016). Children are aware of gambling advertisements and many of them intend to participate in betting activities once they reach legal age (Nyemcsok et al., 2018). In such a way gambling marketing leads to the normalization and social acceptance of gambling activities at a young age.

Although the impact of general gambling advertisements on young people's gambling activities has been researched extensively, little attention has gone to the influence gambling

advertisements in sports have on children. Djohari et al. (2020) voice their concerns about the various ways in which gambling marketing may impact youngsters. A single gambling logo on a player's jersey appears numerous times in other products such as video games, football publications, posters, and collectable cards. In light of this discovery, I investigate if children's gambling rates increase due to jerseys carrying gambling logos.

Hypothesis 2*: The Presence of a Premier League Club with a Gambling Company as a Jersey Sponsor Increases Gambling Activity among Minors in the Same Region.*

Men are more likely than women to engage in gambling activities (Wardle et al., 2011). Additionally, young men indicate that sports betting promotions are a way of normalizing gambling (Thomas et al., 2012). This is why they might be more impacted by gambling jersey sponsorship, compared to girls. Furthermore, Gupta & Derevensky (1997) find that family structure impacts children's susceptibility to gambling behaviours. Children from single-parent or non-traditional households may be more exposed to gambling influences compared to those from two-parent households. The presence of gambling sponsorships in local professional football teams may exacerbate this effect, particularly in less stable household environments. Moreover, children who do not perform well in school are at a higher risk of engaging in gambling activities. Shead et al. (2010) found that among other factors, poor school performance is a strong predictor of gambling problems.

These demographic traits could influence the magnitude of the effect of local gambling jersey sponsors on the gambling behaviour of children. I, therefore, research how this relationship evolves across these three factors; gender, household composition, and school performance.

The current literature suggests that gambling sponsorship in the PL is likely to influence gambling behaviour in the UK. This effect is expected to vary across different demographics, with gender, age, education, household composition, and school performance. Although the relationship between betting advertisements in sports and gambling rates is discussed in the academic literature, little research has empirically addressed the topic. This paper contributes to the academic landscape by addressing this relation from a quantitative perspective. Moreover, in contrast to earlier research, it selects a particular kind of gambling advertisement—jersey sponsorship—and concentrates on the influence at a regional level.

3. Data

3.1 Summary of Data Sources

For the research, I use two repeated cross-sectional datasets with information on gambling behaviour in the UK. Both datasets are provided by the UK data service. The datasets differ in comparison to age group since one includes information on adults and the other contains information on gambling activity among minors. I combine these datasets with data on jersey sponsors from the PL that I gather through several online sources, outlined in Appendix A.

3.2 Descriptive Statistics

3.2.1 Quarterly Telephone Gambling Tracker

The first dataset, the Quarterly Telephone Gambling Tracker, contains data on gambling behaviour from 2016 to 2022, except in 2021 due to COVID restrictions. The survey contains information on the gambling behaviour of random individuals in the UK, like whether they participated in gambling in the last month, which specific type of gambling (ex. sports betting), and where they gambled. Furthermore, it also includes general information about the individuals like gender, age, education level, and residential area. It also contains a weight factor to make the results more representative of the overall population in the UK when executing statistical analysis.

The descriptive statistics for this dataset are shown in Table 1. The Gambling, Football Gambling, and Private Gambling are variables that indicate whether an individual gambled (on a specific topic) in the past 4 weeks. Age, Male, Region, and Education are the related traits of these persons. Gamble Jersey is a binary variable indicating the presence of a PL club in the region with a gambling company as a shirt sponsor. Gamble Jersey Count relates to Gamble Jersey, only now it is a continuous variable indicating the number of teams with a gambling company as a jersey sponsor. Quarter refers to the quarter and year the individual was interviewed. Finally, Weight is not represented in the descriptive statistics, but is a component that makes it able to adjust the observations in such a way that the results become more representative of the total population. The total dataset consists of 21179 observations. The variable Education has some missing data points, totalling 19771 observations. Appendix B shows a more comprehensive overview of all the variables, including an overview of all the categories for the variables Age, Region, and Education.

Table 1: Descriptive Statistics Quarterly Telephone Gambling Tracker

Variable	Obs	Mean	Std. Dev.	Min	Max
Gambling	21179	.448	.497	0	1
Football Gambling	21179	.049	.216	0	1
Private Gambling	21179	.048	.214	0	1
Age	21179	3.93	1.69	1	6
Male	21179	.498	.5	0	1
Region	21179	6.012	2.825	1	10
Education	19771	3.615	.825	1	6
Gamble Jersey	21179	.589	.492	0	1
Gamble Jersey Count	21179	.948	.982	0	3
Quarter	21179	31.175	7.97	19	46

Notes: Gambling, Football Gambling, Private Gambling, Age, Male, Region, Education, and Quarter are taken from the Quarterly Telephone Gambling Tracker gathered by the UK Data Service. Gamble Jersey and Gamble Jersey Count have been collected through several sources outlined in Appendix A. A complete overview of the definitions and categories of the variables is presented in Appendix B.

One limitation of the data is that it only measures gambling activity over the past 4 weeks, where it would be interesting to see how this develops over other time periods. Additionally, the age of participants was measured by different age categories, which does not allow for a continuous measure in the analysis. Finally, there is no data available in 2021, enabling us to conclude developments in this year.

3.2.2 Young People and Gambling Survey

The second dataset, the Young People and Gambling Survey, is very similar to the Quarterly Telephone Gambling Tracker but specifically focuses on the gambling behaviour of minors. Another difference between the datasets is that this does not measure gambling behaviour quarterly, but yearly. The Young People and Gambling Survey gathered data from 2011 to 2023, excluding 2020 and 2021. All the participants surveyed were between 10 and 16 years old.

The descriptive statistics for the Young People and Gambling Survey dataset are shown in Table 2. This dataset only contains the Gambling variable, indicating whether an individual gambled in the past 7 days. Male and Region are specific traits of the individual. Good School Performance is a binary variable in which the participant indicated whether he or she performed well in school or not. The Two Parents variable is also a binary indicator showing whether the child lives in a two-parent household or not. Gamble Jersey relates to the presence of a PL club with a gambling jersey sponsor in the region. The Gamble Jersey Count indicates the exact number of clubs with a gambling jersey sponsor in the region. Year refers to the time the child was surveyed. Lastly, the dataset includes a Weight component that allows us to adjust the findings so that they are more representative of the overall population,

this is not presented in the descriptive statistics. All variables have different numbers of observations due to missing information, this would happen when a child did not fill in the survey completely. Gamble Jersey has the highest number of observations with 28075 and Good School Performance the lowest with 23011. Appendix C provides a more comprehensive description of all the variables.

Table 2: Descriptive Statistics Young People and Gambling Survey

Variable	Obs	Mean	Std. Dev.	Min	Max
Gambling	28072	.148	.355	0	1
Male	27614	.491	.499	0	1
Region	26762	5.381	2.299	1	9
Good School Performance	23011	.112	.315	0	1
Two Parents	27291	.781	.413	0	1
Gamble Jersey	28075	.607	.488	0	1
Gamble Jersey Count	26762	.995	1.016	0	3
Year	28075	2016.036	3.579	2011	2023

Notes: Gambling, Male, Region, Good School Performance, Two Parents, and Year are taken from the Young People and Gambling Survey gathered by the UK Data Service. Gamble Jersey and Gamble Jersey Count have been collected through several sources outlined in Appendix A. A complete overview of the definitions and categories of the variables is presented in Appendix C.

Gambling activity is only measured over the past 7 days, which is a quite small timeframe compared to other research that measures gambling activity. This could give biased results, compared to assessing gambling activity over a longer period. Measuring gambling activity over different periods would provide a more complete picture of the gambling behaviour of children. Additionally, we miss observations for 2020 and 2021, which limits our understanding of this period. Finally, school performance is a self-assessed measure which might not resemble the true academic performance of the individual.

3.3 Gambling Trends

To provide additional context for understanding the evolution of gambling activity in the UK over the past years, this research includes several preliminary statistics. Figure 3 shows six different graphs that indicate how gambling activity developed over time in the UK.

Figure 3A shows how the average gambling rates have developed from 2016 to 2022, with the note that no data was available for the year 2021. There is no clear trend over the years. The gambling rate has fluctuated between 40% and 50%. The coronavirus pandemic may have contributed to the abrupt decline in 2020; yet, gambling activity has since increased again to levels before the pandemic.

Figure 3B shows the same information as Figure 3A, only now two trends are visualized for men and women. The gambling rates among men have constantly been above those of

women, supporting the academic findings that men gamble more than women. Furthermore, the trends of both gender types move similarly across time.

Figures 3C and 3D show the trends for private and football gambling respectively. Again we do not see a clear trend in these specific types of gambling across time. Both gambling rates are significantly lower than overall gambling rates, as one would expect given that they constitute a part of the total gambling rate. For private gambling, the rate varies from 10% to 2%. There is a drop during the COVID period, which is increasing again after this period. The trend moves quite similar to that of the overall gambling rate. For football gambling the rate moves between 7% and 3% showing less variation compared to private betting.

Figure 3E shows the development of gambling rates per year for minors in the UK. There is a clear downward trend in the observed years. In 2011, slightly less than 25% of the children had gambled in the past 7 days, where the current gambling rate is around 10%. This contradicts the worries expressed by various governmental and social organizations, which claim that problems with gambling are also rising among children.

Figure 3F shows the same gambling rates as Figure 3E, but separates the rates based on gender. The rate of boys is continually higher than that of girls but converges over time. Both trends move similarly over time, only in 2019 the girl's trend start increasing slightly, whereas the boy's trend made a significant drop.

Overall, the gambling trends do not show an increase in (specific) gambling activity which might not align with expectations related to the concerns stressed by social institutions. On the other hand, these statistics confirm that the UK is one of the largest gambling economies in the world and that gambling rates are generally very high.

4. Methodology

4.1 Empirical Analysis Method

This study employs a two-way fixed effects (TWFE) regression model to examine the relationship between shirt gambling sponsorship in the PL and regional gambling rates in the UK. The TWFE model allows us to control for unobserved heterogeneity across regions and time, capturing the impact of jersey sponsorship by gambling companies on gambling activity.

Figure 3: Gambling Trends in the UK
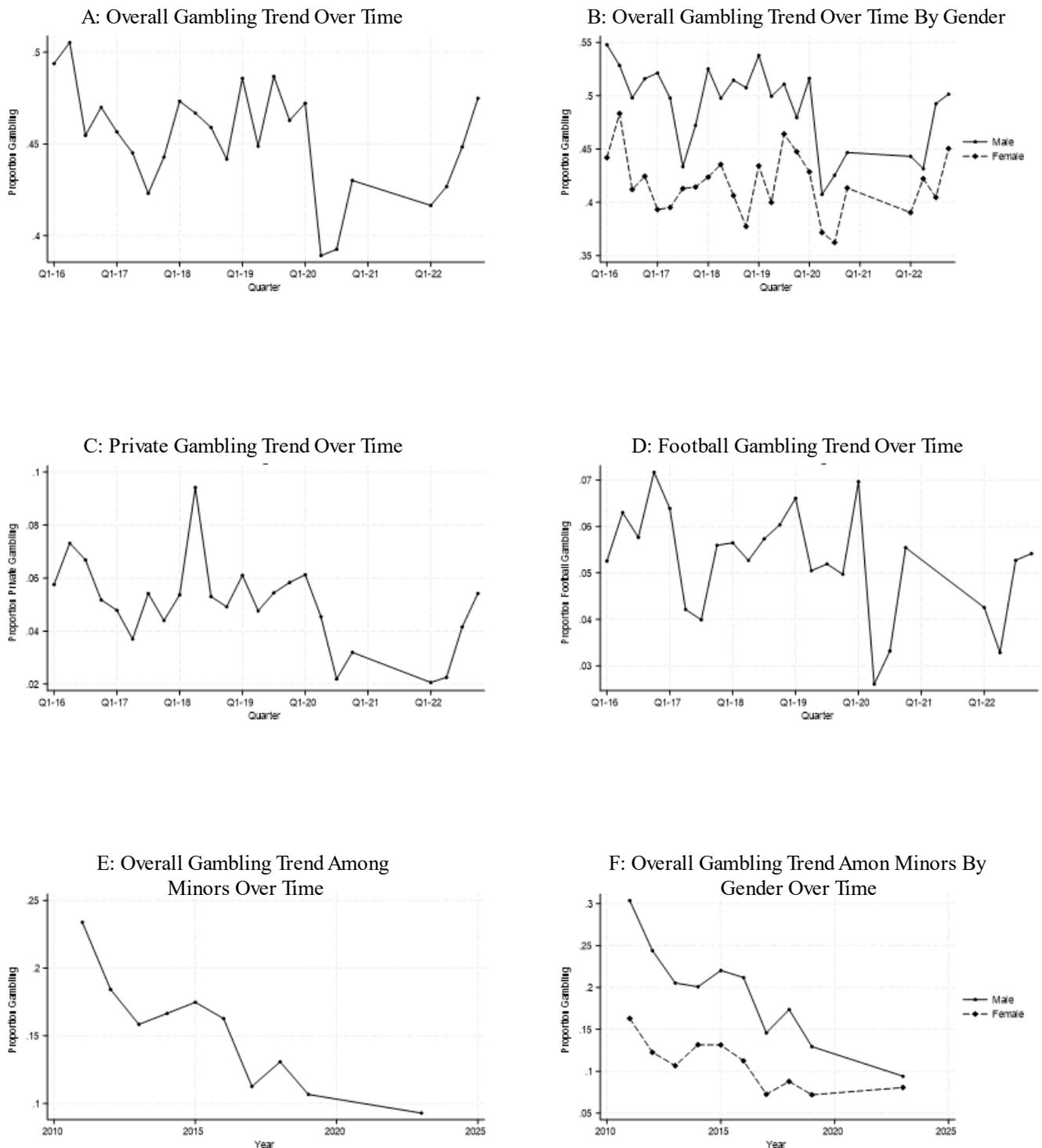
Notes: The figure includes 6 graphs relating to the following gambling trends; (A) Overall Gambling, (B) Overall Gambling by Gender, (C) Private Gambling, (D) Football Gambling, (E) Overall Gambling Among Minors, (F) Overall Gambling Among Minors By Gender. Figures (A), (B), (C), and (D) contain data extracted from the Quarterly Telephone Gambling Tracker and misses data points in 2019. Figures (E) and (F) contain data extracted from the Young People and Gambling Survey and misses data points in 2020 and 2021.

4.2 Baseline model

The baseline model is a general TWFE estimation where we examine the effect of jersey sponsorship by gambling companies on gambling activity on a local level. By including time-fixed effects and region-fixed effects I constructed the following model:

$$\gamma_{it} = \alpha_i + \tau W_{it} + \lambda_i + \delta_t + \varepsilon_{it} \quad (1)$$

Where γ_{it} is the outcome, a binary variable indicating whether a person has gambled in general, gambled in a private context (without the involvement of a commercial party), or gambled on football matches specifically. This indicates gambling activity in the past 4 weeks and these variables are included in the Quarterly Telephone Gambling Tracker dataset. The Young People and Gambling Survey dataset only contains information on overall gambling and this refers to gambling participation in the last 7 days. α_i is the intercept. τ is the effect of the gambling jersey sponsor on the outcome, W_{it} is a binary variable showing the presence of a PL club with a gambling company as a shirt sponsor in region i at time t. λ_i represents region-specific fixed effects and δ_t represents time-specific fixed effects. ε_{it} is the error term clustered at the region level.

4.3 Extended Model

The PL is not active during the whole year, but only from mid-August till the end of May (SkySports, 2024). This means that during a few months, no matches are broadcasted or people will visit games. This would also limit the exposure of gambling companies as jersey sponsors. This might lower the effect jersey sponsorship would have on gambling activity during the off-season period.

The Quarterly Telephone Gambling Tracker contains data points which are gathered per quarter which allows us to adjust the baseline model in such a way that we only measure the effect during the PL season. The quarters one, two, and four cover the time from October to July which roughly coheres with the period that the PL is active. Unfortunately, this does not match the exact date, but I use it to get an indication of the difference in effect between the on and off-season period. The Young People and Gambling Survey dataset only contains data on a yearly level and therefore does not apply to the extended model. The extended model is designed in the following manner:

$$\gamma_{it} = \alpha_i + \sigma(W_{it} \times V_t) + \tau W_{it} + \lambda_i + \delta_t + \varepsilon_{it} \quad (2)$$

Model (2) now adds V_t, which is a binary variable indicating whether the PL was active during the time the individual was interviewed. This variable is constructed based on the variable Quarter and takes value 1 if it indicates the first, second, or fourth quarter of the year and zero otherwise. σ is now the effect of the gambling jersey sponsorship by a gambling company when the PL is active. V_t is not included separately in the model, since its effect is included in the time-fixed effects factor in the model.

4.4 Interaction Model

Finally, I present a model which allows interaction between the effect of gambling companies as jersey sponsors of a PL team and multiple demographics; age, gender, education, household composition, and school performance. The model is specified in the following way:

$$\gamma_{it} = \alpha_i + \mu(W_{it} \times X_{it}) + \tau W_{it} + \varphi X_{it} + \lambda_i + \delta_t + \varepsilon_{it} \quad (3)$$

Compared to the baseline model (1), we add X_{it} which refers to the demographic factor added. This is interacted with W_{it}, the presence of a PL club with a gambling jersey sponsor, such that I can assess the magnitude and significance of this effect across personal traits that have been proven to influence gambling behaviour. μ will then be the difference in effect across demographics.

4.5 Assumptions

The model depends on three main assumptions. First I need to assume that the people who live in the regions with PL clubs that have a gambling company as jersey sponsor are exposed to this type of advertising by gambling companies. If this were not the case, the model would falsely identify that people would be confronted with the gambling companies on the shirt.

The PL is very popular in the UK and its viewership has been consistent over all seasons across the last two decades. More than 75% of the total UK population watched at least one game in the 2022-2023 season (Singh, 2023). This indicates that a large part of the total population would at least once be exposed to a PL game and in this case also the jersey sponsors of the teams that play in these matches. Of course, it is the question if people follow or support the teams within their region, or also other clubs outside the region that they live in. Research indicates that almost half of the football supporters in the UK live within 15

miles of the stadium that they support, while only 10% indicate that the club they support is located more than 200 miles away from their home (Cummins, 2023). Additionally, more than 60% of the fans indicate that they only support one men's team, making it less likely that individuals are influenced by the sponsors of other clubs.

Overall, it is clear that there is a large football community in the UK and that the sport is watched by many people. This enhances the validity of our assumption that people are exposed to the jersey sponsors of the PL clubs within the region. On the other hand, we do see that there are people who do not watch PL matches and people who follow PL clubs outside the region that they live in. Consequently, it is likely that this first assumption will not hold, which must be taken into account while analyzing the outcomes.

The second assumption relates to the region-specific alterations across time that would influence gambling activity. In this case, gambling companies could choose to sponsor certain PL clubs in specific regions because they expect gambling activity to increase in the region. An example of such a situation would be that within a region the regulation on gambling would be relaxed and therefore gambling activity is expected to increase and gambling companies would choose to sponsor PL teams within that region. The exposure to gambling advertisements through jersey sponsorship would not be random in this case, influencing the outcome. In the context of the UK, to my knowledge, there are not any region-specific developments during the research period that would significantly influence gambling activity and jersey sponsorship by gambling companies.

Finally, the model assumes that individuals do not alter their behaviour in the expectancy of the jersey sponsorship by a gambling company in their region. If this were the case, the gambling levels would already increase before the model expects that the population would be exposed to the jersey sponsoring. In reality, I do not expect this to be the case since people only actively see the shirt during matches and other activities related to the club. Since this is thus mainly during the season, I expect this assumption to hold.

5 Results

5.1 Results Baseline Model

Table 3 shows no significant relation between the presence of a PL club with a gambling company as a jersey sponsor and gambling rates. Column (1) reports an insignificant effect of

this gambling company jersey sponsor on overall gambling participation in the region where the PL club is located. In this case, the explanatory factor presented on the left part of Table 3 indicates the presence of a PL club with a gambling company shirt sponsor. Column (2) reports that there again is no significant effect of this explanatory factor on the specific type of private gambling. Column (3) presents the effect of gambling jersey sponsorship on football betting specifically, again the result is insignificant. Finally, Column (4) shows that there is no significant effect on general gambling among children. The results do not indicate a relation between PL gambling sponsorship and gambling activity across all different measures included in the analysis.

Table 3: Main Results Baseline Model

	(1) General Gambling	(2) Private Gambling	(3) Gambling on Football	(4) General Gambling among Minors
Presence of Gambling Jersey Sponsor in the Region	.0039624 (.0141045)	-.0019477 (.009442)	-.0001798 (.0046454)	-.004226 (.0130443)
Observations	21179	21179	21179	26762

Notes: Robust standard errors in parenthesis. *** p<0.01, ** p<0.05, *p<0.1 .The results refer to the baseline model (1). General Gambling, Betting on Football, and Private Betting are taken from the Gambling Quarterly Telephone Tracker gathered by the UK Data Service from 2016 to 2022, excluding 2021. These betting variables indicate individual gambling participation in the last 4 weeks. General Gambling among Minors is taken from the Young People and Gambling Survey gathered by the UK Data Service from 2011 to 2023, excluding 2021 and 2022. This variable indicates gambling participation in the past 7 days. Data on the sponsorship of PL clubs is gathered through several sources shown in Appendix B. Presence of a Gambling Jersey Sponsor in the Region is a binary indicator that is equal to 1 if there is a PL club with a gambling company as a jersey sponsor in the region of the individual.

5.2 Results Extended Model

Table 4 shows that when the effect of gambling companies' jersey sponsorship in the PL is examined during the period that the PL is active there is still no effect on gambling participation. This model includes the PL Active variable which indicates whether the PL season was active during the period the individual was questioned or not. Column (1) shows no significant effect of jersey sponsorship by gambling companies during the period that the PL is active on general gambling rates. Column (2) does show a significant effect on private gambling at the 10% confidence level, but testing the joint significance of the coefficient of the presence of a gambling jersey sponsor in the region and the coefficient of the interaction term provides again an insignificant effect. Column (3) also indicates no significant effect of gambling on football. Overall the results are all insignificant showing no clear influence of jersey sponsorship by gambling companies in the PL on gambling activity during the PL season.

<table>
<tr><td colspan="4" align="center">**Table 4**: Main Results Extended Model</td></tr>
<tr><td></td><td align="center">(1)</td><td align="center">(2)</td><td align="center">(3)</td></tr>
<tr><td></td><td align="center">General Gambling</td><td align="center">Private Gambling</td><td align="center">Gambling on football</td></tr>
<tr><td>Presence of a Gambling Jersey Sponsor in the Region</td><td align="center">-.0035526
(.0177499)</td><td align="center">-.0122667
(.011463)</td><td align="center">.0018947
(.0068752)</td></tr>
<tr><td>Presence of a Gambling Jersey Sponsor in the Region X PL Active</td><td align="center">.0100199
(.0179657)</td><td align="center">.0137587*
(.0068724)</td><td align="center">-.002766
(.0052651)</td></tr>
<tr><td>Observations</td><td align="center">21179</td><td align="center">21179</td><td align="center">21179</td></tr>
</table>

Notes: Robust standard errors in parenthesis. *** p<0.01, ** p<0.05, *p<0.1 .The results refer to the extended model (2). General Gambling, Betting on Football, and Private Betting are taken from the Gambling Quarterly Telephone Tracker gathered by the UK Data Service from 2016 to 2022, excluding 2021. These betting variables indicate individual gambling participation in the last 4 weeks. PL Active is a binary factor that shows whether the PL is active based on the quarters of the year. Data on the sponsorship of PL clubs is gathered through several sources shown in Appendix B. Presence of a Gambling Jersey Sponsor in the Region is a binary indicator that is equal to 1 if there is a PL club with a gambling company as a jersey sponsor in the region of the individual.

5.3 Results Interaction Model

Table 5A indicates that the effect of jersey sponsorship by gambling companies in the PL on gambling rates remains insignificant across demographics. Column (1) shows that there is no significant influence of gambling jersey sponsorship on the gambling activity of men, compared to that of women. Column (2) shows that there is an effect for a specific age category, namely people between 55 and 64 years. The presence of a PL club with a gambling company as a jersey sponsor increases gambling rates by 6,7 percentage points among people aged between 55 and 64, compared to people aged between 16 and 24, ceteris paribus. This effect is significant at the 1% significance level. Lastly, column (3) indicates that there is no significant effect across different education levels, where the base level of the education variable is having no formal education. It is surprising that education separately also does not show a significant effect, except for the primary school category. This is in contradiction with findings in the academic literature that suggest that gambling activity is lower for individuals with a higher educational level.

Table 5B shows the effect of shirt sponsorship by gambling corporations on gambling activity among minors is not significant across several personal traits. Column (4) shows no significant effect on gambling rates among boys, compared to girls. Column (5) shows that

Table 5A: Main Results Interaction Model

	(1) General Gambling	(2) General Gambling	(3) General Gambling
Presence of Gambling Jersey Sponsor in the Region	-.0039719 (.0160211)	-.0145454 (.0166595)	.0869364 (.0800363)
Male	.0636195*** (.0079467)		
Presence of Gambling Jersey Sponsor in the Region X Male	.0177371 (.011288)		
Age(25-34)		.0898131*** (.0172518)	
Age(35-44)		.0898258*** (.0207836)	
Age(45-54)		.1533172*** (.0144727)	
Age(55-64)		.093319*** (.0085754)	
Age(65+)		.0525896*** (.0106484)	
Presence of Gambling Jersey Sponsor in the Region X Age(25-34)		.0100737 (.0191373)	
Presence of Gambling Jersey Sponsor in the Region X Age(35-44)		.0250001 (.028374)	
Presence of Gambling Jersey Sponsor in the Region X Age(45-54)		-.0181141 (.0173898)	
Presence of Gambling Jersey Sponsor in the Region X Age(55-64)		.0678432*** (.0094704)	
Presence of Gambling Jersey Sponsor in the Region X Age(65+)		.0253454 (.0146473)	
Education(Primary School)			.0495824* (.0263299)
Education(Secondary, High School)			.048611 (.0605998)
Education(University)			-.015242 (.0600207)
Education(Higher University)			-.0770144 (.0561025)
Education(Still In Full-Time Education)			-.0189428 (.0530271)
Presence of Gambling Jersey Sponsor in the Region X Education(Primary School)			-.069314 (.0617738)
Presence of Gambling Jersey Sponsor in the Region X Education(Secondary, High School)			-.0789922 (.0708231)
Presence of Gambling Jersey Sponsor in the Region X Education(University)			-.0815884 (.0740723)
Presence of Gambling Jersey Sponsor in the Region X Education(Higher University)			-.0765228 (.0681846)
Presence of Gambling Jersey Sponsor in the Region X Education(Still In Full-Time Education)			-.1858244 (.1073862)
Observations	21179	21179	19771

Notes: Robust standard errors in parenthesis. *** p<0.01, ** p<0.05, *p<0.1 .The results refer to the interaction model (3). General Gambling, Male, Age, and Education are taken from the Gambling Quarterly Telephone Tracker gathered by the UK Data Service from 2016 to 2022, excluding 2021. The betting variable indicates individual gambling participation in the last 4 weeks. The Age variable has a base category of 16-24 and the Education variable has a base category of no formal education. Data on the sponsorship of PL clubs is gathered through several sources shown in Appendix B. The Presence of a Gambling Jersey Sponsor in the Region is a binary indicator that is equal to 1 if there is a PL club with a gambling company as a jersey sponsor in the region of the individual.

having a two-parent household does not influence the effect of jersey sponsorship by gambling companies on the gambling activity of a child, where the relation is insignificant. Finally, column (6) also does not show a significant effect when there is a distinction between children who perform well and bad at school. All personal traits are significant individually which is in line with the academic literature. To summarize, researching the effect across several demographics does not provide any significant results on general gambling rates among children.

Table 5B: Main Results Interaction Model

	(4) General Gambling among Minors	(5) General Gambling among Minors	(6) General Gambling among Minors
Presence of Gambling Jersey Sponsor in the Region	.0079239 (.0102076)	-.0047825 (.0133338)	.0025088 (.0147963)
Male	.0975718*** (.0115503)		
Presence of Gambling Jersey Sponsor in the Region X Male	-.0196624 (.015984)		
Two Parents		-.0285326** (.0110853)	
Presence of Gambling Jersey Sponsor in the Region X Two Parents		.0039538 (.0108743)	
Good School Performance			.0898023** (.02834)
Presence of Gambling Jersey Sponsor in the Region X Good School Performance			-.0340046 (.0302393)
Observations	26329	25982	22016

Notes: Robust standard errors in parenthesis. *** p<0.01, ** p<0.05, *p<0.1 .The results refer to the interaction model (3). General Gambling among Minors, Male, Two Parents, and Good School performance are taken from the Young People and Gambling Survey gathered by the UK Data Service from 2011 to 2023, excluding 2021 and 2022. This gambling variable indicates gambling participation in the past 7 days. Data on the sponsorship of PL clubs is gathered through several sources shown in Appendix B. Presence of a Gambling Jersey Sponsor in the Region is a binary indicator that is equal to 1 if there is a PL club with a gambling company as a jersey sponsor in the region of the individual.

5.4 Robustness Checks

For the robustness analysis, I use a continuous measure of the number of clubs in the region with a gambling company as a jersey sponsor, instead of a binary variable indicating only the presence. I run the baseline, extended, and interaction models again to test whether the results differ from the main analysis.

5.4.1 Baseline Model

Table 6 again shows no relation between the jersey sponsoring by gambling companies in the PL and local gambling activity. Column (1) shows that there remains no significant effect on general gambling rates. Column (2) confirms no significant relation between the amount of PL clubs that have a gambling company as a shirt sponsor and private gambling rates specifically. Column (3) finds no significant effect on football gambling rates as well. Column

(4) does also not show a significant effect on general gambling rates among minors. The results for the baseline model are in coherence with the main results and do not show any significant effect across all types of gambling.

Table 6: Robustness Results Baseline Model

	(1) General Gambling	(2) Private Gambling	(3) Gambling on Football	(4) General Gambling among Minors
Number of Gambling Jersey Sponsors in the Region	-.0010932 (.0103376)	.0031482 (.0043811)	.0027415 (.0031396)	-.0005891 (.00641)
Observations	21179	21179	21179	26762

Notes: Robust standard errors in parenthesis. *** p<0.01, ** p<0.05, *p<0.1 .The results refer to the baseline model (1). General Gambling, Betting on Football, and Private Betting are taken from the Gambling Quarterly Telephone Tracker gathered by the UK Data Service from 2016 to 2022, excluding 2021. These betting variables indicate individual gambling participation in the last 4 weeks. General Gambling among Minors is taken from the Young People and Gambling Survey gathered by the UK Data Service from 2011 to 2023, excluding 2021 and 2022. This variable indicates gambling participation in the past 7 days. Data on the sponsorship of PL clubs is gathered through several sources shown in Appendix B Number of Gambling Jersey Sponsors in the Region is a continuous indicator is equal to the number of clubs with a gambling company as a jersey sponsor in the region.

5.4.2 Extended Model

Table 7 shows that the robustness results from the analysis of the extended model remain the same as those of the main analysis. Column (1) does not show a significant effect on general gambling. Columns (2) and (3) show that the results of this robustness analysis also remain insignificant for the specific gambling types betting in private and betting on football. This supports our earlier findings that there is no clear effect of shirt sponsorship in the PL by gambling companies on gambling activity during the PL season.

Table 7: Robustness Results Extended Model

	(1) General Gambling	(2) Private Gambling	(3) Gambling on football
Number of Gambling Jersey Sponsors in the Region	-.0066825 (.0131255)	.0010338 (.0048578)	.0037569 (.0041815)
Number of Gambling Jersey Sponsors in the Region X PL Active	.0074524 (.0067998)	.0028191 (.0033872)	-.0013539 (.0042465)
Observations	21179	21179	21179

Notes: Robust standard errors in parenthesis. *** p<0.01, ** p<0.05, *p<0.1 .The results refer to the extended model (2). General Gambling, Betting on Football, and Private Betting are taken from the Gambling Quarterly Telephone Tracker gathered by the UK Data Service from 2016 to 2022, excluding 2021. These betting variables indicate individual gambling participation in the last 4 weeks. PL Active is a binary factor that shows whether the PL is active based on the quarters of the year. Data on the sponsorship of PL clubs is gathered through several sources shown in Appendix B. Number of Gambling Jersey Sponsors in the Region is a continuous indicator is equal to the number of clubs with a gambling company as jersey sponsor in the region.

5.4.3 Interaction Model

Table 8A supports the findings in the main analysis, resulting in no relation between jersey sponsorship by gambling companies and gambling activity across several personal traits. Column (1) shows a positive significant effect on men's gambling activity due to gambling jersey sponsors, but the joint coefficients are not significant. Column (2) shows that the effect across several age levels is insignificant which differs from the main analysis where there was a significant effect for the 55 to 64 age category. From this, I can only conclude that the effect across age remains unclear. Finally, column (3) supports our earlier finding that the effect across educational levels also does not show significant results. The highest educational level, higher university, and still in full-time education are significant in this model and would reduce gambling activity. This finding contradicts our earlier result, where only a significant effect exists for the primary school category. This shows that there is no clear relation between education and gambling participation, in contrast with the findings of other academics.

Table 8B validates that there is no relation between shirt sponsorship by gambling companies and gambling participation among minors across several personal factors. Column (4) shows no significant effect of gambling jersey sponsors on gambling activity among boys compared to girls. Column (5) again shows no difference in the effect of household composition, in this case living in a two-parent household. Finally, column (6) shows that performing well in school does not show a significant difference in the effect of shirt sponsorship by gambling companies on gambling activity among minors.

6. Discussion

The results do not cohere with the expectations formulated in the hypotheses. Having a PL club with a gambling company as a jersey sponsor was expected to raise gambling activity. For general gambling, private gambling, gambling on football matches, and gambling among minors the results do not show any significant effect. Altering the baseline model such that the effect of jersey sponsorship by gambling companies on gambling activity is only examined during the PL season again gave no significant results. Overall, there is no evidence that gambling companies as shirt sponsors in the PL influence gambling rates.

Some demographic subgroups were expected to be affected more by the presence of such types of sponsorship, therefore the effect was also researched across gender, age, and

Table 8A: Robustness Results Interaction Model

	(1) General Gambling	(2) General Gambling	(3) General Gambling
Number of Gambling Jersey Sponsors in the Region	-.00596 (.0112126)	.0012811 (.0105017)	.0047088 (.0313368)
Male	.0651104*** (.0060522)		
Number of Gambling Jersey Sponsors in the Region X Male	.0095334* (.0047596)		
Age(25-34)		.1033718*** (.0159357)	
Age(35-44)		.1126399*** (.0190747)	
Age(45-54)		.1591229*** (.0135146)	
Age(55-64)		.1209975*** (.0151896)	
Age(65+)		.0635757*** (.010372)	
Number of Gambling Jersey Sponsors in the Region X Age(25-34)		-.0061433 (.0074413)	
Number of Gambling Jersey Sponsors in the Region X Age(35-44)		-.0065648 (.013085)	
Number of Gambling Jersey Sponsors in the Region X Age(45-54)		-.0162003 (.0098653)	
Number of Gambling Jersey Sponsors in the Region X Age(55-64)		.0154675 (.0085951)	
Number of Gambling Jersey Sponsors in the Region X Age(65+)		.0065943 (.0084682)	
Education(Primary School)			.0269768 (.0172056)
Education(Secondary, High School)			.0114531 (.048809)
Education(University)			-.0548526 (.0497263)
Education(Higher University)			-.1128669** (.0472338)
Education(Still In Full-Time Education)			-.2135587* (.1133128)
Number of Gambling Jersey Sponsors in the Region X Education(Primary School)			-.016475 (.0258662)
Number of Gambling Jersey Sponsors in the Region X Education(Secondary, High School)			-.0050192 (.0253339)
Number of Gambling Jersey Sponsors in the Region X Education(University)			-.0040549 (.0281235)
Number of Gambling Jersey Sponsors in the Region X Education(Higher University)			-.0048136 (.0237366)
Number of Gambling Jersey Sponsors in the Region X Education(Still In Full-Time Education)			.0461241 (.0559443)
Observations	21179	21179	19771

Notes: Robust standard errors in parenthesis. *** $p<0.01$, ** $p<0.05$, *$p<0.1$ .The results refer to the interaction model (3). General Gambling, Male, Age, and Education are taken from the Gambling Quarterly Telephone Tracker gathered by the UK Data Service from 2016 to 2022, excluding 2021. The betting variable indicates individual gambling participation in the last 4 weeks. The Age variable has a base category of 16-24 and the Education variable has a base category of no formal education. Data on the sponsorship of PL clubs is gathered through several sources shown in Appendix B. Number of Gambling Jersey Sponsors in the Region is a continuous indicator is equal to the number of clubs with a gambling company as a jersey sponsor in the region.

Table 8B: Robustness Result Interaction Model

	(4) General Gambling among Minors	(5) General Gambling among Minors	(6) General Gambling among Minors
Number of Gambling Jersey Sponsors in the Region	.0033681 (.0056125)	.0003204 (.006513)	.0055265 (.0102484)
Male	.0939948*** (.0074029)		
Number of Gambling Jersey Sponsors in the Region X Male	-.0082069 (.0044285)		
Two Parents		-.0250776** (.0101117)	
Number of Gambling Jersey Sponsors in the Region X Two Parents		-.0009611 (.0054347)	
Good School Performance			.0829132** (.0253972)
Number of Gambling Jersey Sponsors in the Region X Good School Performance			-.0135612 (.0146591)
Observations	26329	25982	22016

Notes: Robust standard errors in parenthesis. *** p<0.01, ** p<0.05, *p<0.1 .The results refer to the interaction model (3). General Gambling among Minors, Male, Two Parents, and Good School performance are taken from the Young People and Gambling Survey gathered by the UK Data Service from 2011 to 2023, excluding 2021 and 2022. This gambling variable indicates gambling participation in the past 7 days. Data on the sponsorship of PL clubs is gathered through several sources shown in Appendix B. Number of Gambling Jersey Sponsors in the Region is a continuous indicator is equal to the number of clubs with a gambling company as a jersey sponsor in the region.

educational backgrounds among adults. Furthermore, the influence was also further examined across genders, household composition, and school performance among children. All these factors did not influence the effect and the results remained insignificant, except for the age category 55 to 64 finding that older people gamble more compared to young people.

As a robustness test, I altered the explanatory factor by creating a continuous instead of a binary measure, indicating the exact number of PL clubs in the region that had a gambling company as a shirt sponsor at the time an individual was interviewed. The results in the robustness check mainly remain the same as for the main analysis, finding no clear relation across all different models in the research. Only for two educational categories the result become significant.

Altogether, the analysis does not show a relation between gambling sponsorship in the PL and gambling activity locally. This is not in line with earlier academic research. Hing et al. (2014) do find a relation between gambling sponsorship in sports and gambling rates, showing that it is associated with an increase. Although their research approaches the relation in a different context, Australia, and focuses on general gambling promotions during sports broadcasts, it is notable that our results differ.

One possible explanation for the difference in findings could be that this study specifically focuses on the jersey sponsoring of PL clubs, while there are many other ways in which

gambling organizations are involved in the professional football industry. Other ways that directly expose gambling companies to the public are stadium advertisements (Purves et al., 2020), promotions through digital media platforms of football clubs (Djohari et al., 2020), and television advertisements during sports broadcasts (Purves et al., 2020). These other sponsorships might influence gambling behaviour, although it is probably also highly correlated with the sponsoring of the jerseys of football clubs. Unfortunately, no data was available to include these other types of sponsorship in the analysis. Furthermore, there has been looked at gambling rates influenced by PL gambling sponsoring locally. Although it is common for people to support and follow local clubs, it is also possible for people to follow and support clubs outside of their geographic area, or to not watch football at all. This would reduce the exposure of gambling sponsorships meaning that individuals would not be treated in the way that the method is assuming.

This research is unable to substantiate the concerns expressed by the government, social groups, and the general public regarding the potential effects of gambling sponsorship in the PL on gambling behaviour and societal harm. The results do not demonstrate a possible relationship between these two factors, which does not explicitly indicate there is no causal relation between the two. Further research is required to explore the dynamics in this context and better understand the influence of gambling sponsorships in professional sports.

7. Conclusion

In this study, I examine the influence of jersey sponsorship by gambling companies in the PL on local gambling activity using a TWFE estimation technique.

Based on the analysis of the Quarterly Telephone Gambling Tracker and the Young People and Gambling Survey, there is no significant relation between the presence of a PL club with a gambling jersey sponsor and gambling activity in the same region. The same conclusion holds for the influence on specific gambling types; betting on football matches and private gambling. According to the analysis gambling behaviour among minors is not influenced by gambling jersey sponsorship in the PL as well. The robustness checks validate the findings. Overall, there seems no direct impact of PL gambling sponsorship on local gambling activity. To understand more about the impact of gambling in sports and its potential harm to society, additional research is required.

These findings provide a quantitative contribution to the topic of gambling involvement in sports, while former literature mainly qualitatively approached the subject. Although this paper contributes in this way, it is still limited due to only measuring the influence of gambling jersey sponsorship, while gambling organizations are involved in many other ways in the professional football market.

This paper permits policymakers to effectively address their concerns about the influence of gambling marketing in sports. While I show the overall effect of gambling advertisement in sports through jersey sponsorship is insignificant, resources can be put into other options to address problem gambling in the UK. Additional research could further enrich our understanding of this effect and aid public institutions in making decisions about their strategy to address the current situation.

For future research, I propose to build on the provided analysis by using more comprehensive data on the different types of gambling promotion within the PL. Mapping all the different forms of gambling advertisement in the sport and using this to run a similar analysis would provide a more complete picture of the influence of gambling sponsorship in football on betting activity. Additionally, precise data on individual exposure to these gambling advertisements in sports would improve the analysis by knowing exactly who is exposed and who isn't.

Furthermore, several gambling companies engage in sports sponsorship to access Asian markets, where direct gambling advertisement is forbidden, but sports betting and the PL, in particular, are very popular (Rackham, 2023). Further studies should look into how PL gambling sponsorship affects gambling activities in Asian countries.

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Appendix

Appendix A: Sources PL Jersey Sponsor Data

PL Season	Source	Link
11/12	Historical Football Kits	http://www.historicalkits.co.uk/English_Football_League/season/2011-2012/premier-league.html
12/13	Historical Football Kits	http://www.historicalkits.co.uk/English_Football_League/season/2012-2013/premier-league.html
13/14	Transfermarkt.nl	https://www.transfermarkt.nl/premier-league/trikotsponsoren/wettbewerb/GB1/saison_id/2013
14/15	Historical Football Kits	http://www.historicalkits.co.uk/English_Football_League/season/2014-2015/premier_league.html
15/16	Historical Football Kits	http://www.historicalkits.co.uk/English_Football_League/season/2015-2016/premier-league.html
16/17	Score and Change	https://www.scoreandchange.com/overview-2016-2017-premier-league-sponsors/
17/18	Mirror UK	https://www.mirror.co.uk/sport/football/news/premier-league-sponsors-201718-clubs-10958347
18/19	Football News Website Goal	https://www.goal.com/en/lists/premier-league-2018-19-shirt-sponsors-chevrolet-standard-chartered--all-20-jersey-advertisers/1pgs2fbg8oooz19d4m8kh16i5m#cs08bcdf28aaa9d6fd
19/20	Historical Football Kits	http://www.historicalkits.co.uk/English_Football_League/season/2019-2020/premier-league.html
20/21	Score and Change	https://www.scoreandchange.com/overview-of-the-2020-2021-premier-league-sponsors/
21/22	Score and Change	https://www.scoreandchange.com/overview-of-the-2021-2022-premier-league-sponsors/
22/23	Score and Change	https://www.scoreandchange.com/overview-of-the-2022-2023-premier-league-sponsors/
23/24	For Soccer	https://www.forsoccer.com/news/breaking-down-the-2023-24-premier-league-shirt-sponsors/

Notes: Sources shown in the table are the main websites on which we gathered the information, but also verified by additional online research. The regions where the PL clubs were located were retrieved through Google Maps and matched with those from the Quarterly Telephone Survey and the Young People and Gambling Survey.

Appendix B: Variables Quarterly Telephone Tracker

Gambling – Binary indicator showing whether the individual gambled in the past 4 weeks
      Value = 1.0   Label = Yes
      Value = 0.0   Label = No

Football Gambling – Binary indicator showing whether the individual has placed a bet on the outcome of a football match in the past 4 weeks
      Value = 1.0   Label = Yes
      Value = 0.0   Label = No

Private Gambling – Binary indicator showing whether the individual gambled in a private, non-commercial setting (friends, family, etc.)
      Value = 1.0   Label = Yes
      Value = 0.0   Label = No

Age – Categorical variable relating to the age of the individual
      Value = 1.0   Label = 16 - 24
      Value = 2.0   Label = 25 - 34
      Value = 3.0   Label = 35 - 44
      Value = 4.0   Label = 45 - 54
      Value = 5.0   Label = 55 - 64
      Value = 6.0   Label = 65+

Gender – Gender indicator of individual
      Value = 1.0   Label = Male
      Value = 0.0   Label = Female

Region – Categorical variable referring to the region of residence of the individual
      Value = 1.0   Label = North
      Value = 2.0   Label = North West
      Value = 3.0   Label = Yorks & Humberside
      Value = 4.0   Label = East Midlands
      Value = 5.0   Label = West Midlands
      Value = 6.0   Label = Wales
      Value = 7.0   Label = East Anglia
      Value = 8.0   Label = Greater London
      Value = 9.0   Label = South East
      Value = 10.0   Label = South West

Education
      Value = 1.0   Label = No formal education
      Value = 2.0   Label = Primary school
      Value = 3.0   Label = Secondary school, high school, NVQ levels 1 to 3, etc.
      Value = 4.0   Label = University degree or equivalent professional qualification
      Value = 5.0   Label = Higher university degree, doctorate, MBA, NVQ level 5, etc.

Value = 6.0   Label = Still in full-time education

Gamble Jersey – Binary indicator showing the presence of a PL club in the region with a gambling company as a jersey sponsor
      Value = 1.0   Label = Yes
      Value = 0.0   Label = No

Gamble Jersey Count – Continuous indicator referring to the number of PL clubs in the region with a gambling company as a jersey sponsor

PL Active – Binary indicator constructed on the basis of the wave variable, showing whether the PL was active when the individual was interviewed.
      Value = 1.0   Label = Yes
      Value = 0.0   Label = No

Wave – The year and quarter in which an individual was interviewed
      Value = 16.0   Label = Q2-2015
      Value = 17.0   Label = Q3-2015
      Value = 18.0   Label = Q4-2015
      Value = 19.0   Label = Q1-2016
      Value = 20.0   Label = Q2-2016
      Value = 21.0   Label = Q3-2016
      Value = 22.0   Label = Q4-2016
      Value = 23.0   Label = Q1-2017
      Value = 24.0   Label = Q2-2017
      Value = 25.0   Label = Q3-2017
      Value = 26.0   Label = Q4-2017
      Value = 27.0   Label = Q1-2018
      Value = 28.0   Label = Q2-2018
      Value = 29.0   Label = Q3-2018
      Value = 30.0   Label = Q4-2018
      Value = 31.0   Label = Q1-2019
      Value = 32.0   Label = Q2-2019
      Value = 33.0   Label = Q3-2019
      Value = 34.0   Label = Q4-2019
      Value = 35.0   Label = Q1-2020
      Value = 36.0   Label = Q2-2020
      Value = 37.0   Label = Q3-2020
      Value = 38.0   Label = Q4-2020
      Value = 39.0   Label = Q1-2021
      Value = 40.0   Label = Q2-2021
      Value = 41.0   Label = Q3-2021
      Value = 42.0   Label = Q4-2021
      Value = 43.0   Label = Q1-2022
      Value = 44.0   Label = Q2-2022
      Value = 45.0   Label = Q3-2022
      Value = 46.0   Label = Q4-2022

Value = 47.0   Label = Q1-2023

Weight – Variable allowing to adjust analysis such that it is more representative of the population.

Appendix C: Variables Young People and Gambling Survey

Gambling – Binary indicator showing whether the individual gambled in the past 7 days
        Value = 1.0   Label = Yes
        Value = 0.0   Label = No

Gender - Gender indicator of individual
        Value = 1.0   Label = I am a boy/male
        Value = 0.0   Label = I am a girl/female

Region - Categorical variable referring to the region of residence of the individual
        Value = 1.0   Label = North East
        Value = 2.0   Label = North West
        Value = 3.0   Label = Yorkshire & Humber
        Value = 4.0   Label = East Midlands
        Value = 5.0   Label = West Midlands
        Value = 6.0   Label = East of England
        Value = 7.0   Label = London/South East
        Value = 8.0   Label = South West
        Value = 9.0   Label = Wales

School Performance – Self-assessment of school performance
        Value = 1.0   Label = Doing very/quite well
        Value = 0.0   Label = Doing not very/not at all well

Two Parents – Household composition of the child
        Value = 1.0   Label = Child lives in a household with its two parents
        Value = 0.0   Label = Child does not live in a household with its two parents

Gamble Jersey – Binary indicator showing the presence of a PL club in the region with a gambling company as a jersey sponsor
        Value = 1.0   Label = Yes
        Value = 0.0   Label = No

Gamble Jersey Count – Continuous indicator referring to the number of PL clubs in the region with a gambling company as a jersey sponsor

Year – Relating to the year a child participated in the survey

Weight – Variable allowing to adjust analysis such that it is more representative of the population.

Appendix D: Premier League Jersey Sponsorship Deals 2016/2017

Club	Shirt sponsor	Value (£m)	Product
Man Utd	Chevrolet	47	Cars
Chelsea	Yokohama	40	Tyres
Arsenal	Fly Emirates	30	Airline
Liverpool	Standard Chartered	25	Bank
Man City	Etihad	20	Airline
Tottenham	AIA	16	Insurance
Southampton	Virgin Media	6	Telecoms
Sunderland	Dafabet	6	Gambling
West Ham	Betway	6	Gambling
Everton	Chang Beer	5.3	Beer
C Palace	Mansion	5	Gambling
Swansea	Beteast	4	Gambling
Stoke	Bet 365	3.2	Gambling
Hull City	SportPesa	3	Gambling
West Brom	UK-K8.COM	2.5	Gambling
Bournemouth	Mansion	2	Gambling
Burnley	Dafabet	2	Gambling
Watford	138.com	1.5	Gambling
Leicester	King Power	1	Duty Free
Middlesbrough	Ramsdens	1	Pawnbrokers

Notes: The table is extracted from Jones et al. (2019) and shows the sponsors deals of premier league clubs regarding jersey sponsorship. Shirt sponsor refers to the name of the company that sponsors the club and value is the amount of money the company paid for shirt sponsorship. Product refers to the type of product/service the sponsoring company offers.