

Football finance and Covid-19

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Football finance and Covid-19

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ABSTRACT

This study looks at the financial performance of top English football clubs to understand the impact of the Covid-19 pandemic. Our analysis focuses on English Premier League (EPL) and English Football League (EFL) clubs that have participated at least once in England's highest league, the EPL. Using panel data methodology from 36 clubs between 2005 – 2021, we quantify the impact and severity of Covid-19 on top English football clubs' financial performance. We find statistically significant evidence that profitability deteriorated during the pandemic with EPL clubs more reliant on matchday revenue the most impacted. Both financial stability and indebtedness deteriorated during the pandemic but the deterioration was not statistically significant. EFL clubs were the most impacted by reduced financial stability and increased indebtedness. These findings are vital for football's regulators as it provides empirical evidence on the stability of the industry and also provides insights football club owners on strategies they can adopt to survive during external shocks to the industry

1. Introduction

The World Health Organisation declared the coronavirus (hereafter, COVID-19) outbreak a pandemic on March 11, 2020, following the speed of spread of the viral disease and the resultant death toll. The effects of the COVID-19 pandemic have spread wider than the 2008 Global Financial Crisis (GFC) because of its impact on health care, social life, global trade, travel, and the financial system (Li et al., 2021, pp. 1–15). Three years on, industries, countries and capital markets are still grappling with the economic impact of the viral disease, not to mention the loss of over 6.8m lives worldwide (WHO, 2023). At the height of uncertainty during the first two months of the pandemic, football competition organisers suspended or cancelled their competitions in a bid to minimise the spread of the virus (Tovar, 2021).

Football competitions resumed in May 2020, albeit behind closed doors with strict social distancing guidelines for two main reasons. First, the societal impact of football where watching football matches is a tradition and part of families' social life (Drewes et al., 2021) and a way for large proportions of the population to relax. Second, the economic impact of not resuming football competitions threatened the survival of many football clubs who relied on matchday income (Bond et al., 2022; Parnell et al., 2021). European football survived the GFC that crippled many industries because of its diversified revenue streams, global popularity and the influx of investment from wealthy owners (King, 2010; Szymanski, 2010), leading UEFA to describe the industry as

“recession-proof” (UEFA, 2010).

However, while European football successfully survived the credit crunch from the GFC, it was going through a crisis caused by its football clubs overinvesting in player-related expenditure and building up unsustainable debt (Peeters & Szymanski, 2014; Storm & Nielsen, 2012). In response, UEFA introduced the Financial Fair Play (FFP) regulation in 2011 to encourage football clubs participating in its competitions to live within their financial means (UEFA, 2011). Consequently, the financial landscape in European football improved because FFP induced football clubs to manage their revenue-to-player expenditure ratio better (Caglio et al., 2023; Franck, 2018).

Nevertheless, the COVID-19 pandemic presents more significant problems for European football than the GFC or clubs overspending. The lockdowns and resumption of matches behind closed doors without the attendance of fans wiped out matchday revenue, one of the three primary sources of football clubs' revenue (Maguire, 2021). The other two sources of revenue—commercial and broadcast—are indirectly linked to stadium foot traffic (Bond et al., 2022; Buraimo, 2008; Henderson, 2010), further compounding the negative impact of the pandemic on football clubs' revenue. Also, player wages represent the bulk of football clubs' expenditures and are contractual agreements with players covering more than one financial year. Thus, the shortfall in football clubs' revenue and their financial obligations during the two years of the COVID-19 pandemic are probably the most complex financial crisis in the sport's history.

The existing literature on the COVID-19 pandemic and football has

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focused on the impact of the absence of crowds on home advantage and refereeing decisions (Almeida & Leite, 2021; Bryson, Dolton, et al., 2021; Fischer & Haucap, 2021; Herold et al., 2021; McCarrick et al., 2021; Ramchandani & Millar, 2021; Reade et al., 2022; Wunderlich et al., 2021), stadium attendances, online viewership and spread of the virus (Butler & Butler, 2023; Olczak et al., 2021; Reade et al., 2021; Reade & Singleton, 2021), prospective financial implications (Bond et al., 2022; Kennedy & Kennedy, 2021; Maguire, 2021) and stock market returns on listed clubs (Bedir et al., 2022; Fühner et al., 2021).

However, this paper examines three different aspects—profitability, indebtedness, and financial stability—of the financial impact of the COVID-19 pandemic on football clubs. We focus on the impact of the pandemic on the financial performance and position of top English football clubs because their revenue, wages, and debts are the highest in Europe. Their leagues are also the wealthiest and most followed globally (KPMG Football Benchmark, 2019; Plumley et al., 2020). European football recovered from reporting substantial financial losses in 2011 because of increased revenue and better management of costs (Ahtiainen & Jarva, 2020; Caglio et al., 2023; Dimitropoulos & Scafarto, 2021; Francois et al., 2022) as well as efficient football player sales (Dimitropoulos & Scafarto, 2021; Özaydin, 2020) induced by the introduction of FFP. Therefore, with revenue, which drives investment in football, taking a hit due to the pandemic, we examine its impact on profitability. Also, the possibility of insolvency in football grew with clubs overspending and increasing their debt, but similar to profitability, its likelihood reduced post-FFP, although less sharply (Caglio et al., 2023; Plumley et al., 2020). Therefore, this study empirically evaluates the impact of the COVID-19 pandemic on the profitability, indebtedness, and financial stability of top English football clubs.

This study contributes to the literature by providing empirical evidence on the financial impact of COVID-19 on the financial performance of football clubs, specifically top English football clubs. To our knowledge, this is the first study on the financial impact of COVID-19 on English football.

The rest of the paper is as follows: the next section explains football clubs' revenue sources and how they are determined and is followed by an examination of the potential impacts of COVID-19 on clubs' finances. The following section describes our data and the methodology adopted for this paper while the penultimate section contains the empirical results of descriptive statistics and regression analysis of top English football clubs' performance during the COVID-19 pandemic. The final section provides concluding remarks on the paper.

2. Football revenue sources and their determinants

European football thrived during the GFC because of its revenue growth and the global demand for its product. Football clubs mainly earn money from matchday, broadcast, and commercial revenue, and to a lower magnitude, the sale of players to other clubs (Grundy, 2004; Henderson, 2010). Clubs generate matchday revenue through ticket sales, catering services, and the sale of magazines at football matches taking place at their stadiums, with additional revenue earned from renting out the stadium for non-football events. Matchday revenue is a function of match attendance, and in the EPL, most matches are at full capacity (Bond et al., 2022; Buraimo et al., 2006), with stadium capacity representing a constraint (Buraimo & Simmons, 2008). Broadcast revenue is somewhat an extension of matchday revenue in that the matches played at the stadium are broadcast to audiences via television without the limitation of stadium capacity. Across Europe, competition organizers sell broadcast rights to satellite television operators for fixed cycles usually between three to five years and distribute the revenue to participating clubs based on their performances (Henderson, 2010). Globalization and technological advancement have spread the broadcast reach of football competitions and consequently, grown broadcast revenue. The EPL's broadcast revenue grew from £232m in 1992 to £9.2bn in 2019 (Sports Business Institute, 2019).

Uncertainty of outcome and fans deriving more utility from closely contested football matches are issues predominant in the literature (Buraimo & Simmons, 2008, 2015; Forrest et al., 2005; Forrest & Simmons, 2002) as significant determinants of stadium and television audiences. For stadium attendance, some studies (Buraimo, 2008; Buraimo & Simmons, 2008; Cox, 2018) have found the opposite effect in England, with home fans at stadiums seemingly favouring easy wins or the odd case of "David beating Goliath" (Buraimo & Simmons, 2008). The evidence for the uncertainty of outcome is not unanimous for television audiences, with some studies (Buraimo et al., 2010; Forrest et al., 2005) finding evidence for its significance while others (Buraimo et al., 2022; Buraimo & Simmons, 2015; Cox, 2018) do not but emphasize player quality as a more vital determinant. Also, evidence (Buraimo, 2008) suggests that stadium attendance positively impacts television audiences, while televising matches negatively impacts stadium attendance in some leagues (Buraimo, 2008; Buraimo et al., 2010; Forrest & Simmons, 2006). Nevertheless, broadcast and matchday revenue across Europe and in the EPL has consistently grown.

Finally, football clubs generate commercial revenue through merchandising, sponsorship, and advertising agreements with companies in different industries who pay to advertise their products to the clubs' fanbase (Henderson, 2010). Preseason tours on different continents (Hill & Vincent, 2006) and more recently, social media following are avenues for football clubs to showcase the strength of their fanbase and the reach of their brand to prospective sponsors. As a result, commercial revenue has grown significantly in European football as its clubs' popularity increased. In 2019, the commercial revenue for European top-division clubs was €8.6bn, a 72% growth from 2009 (UEFA, 2021).

3. Covid-19 and its potential impact on clubs' finances

Following the WHO declaring the COVID-19 outbreak as a pandemic in March 2020, football governing bodies and competition organizers around the world postponed or cancelled football activities to prevent the spread of the virus (Tovar, 2021). The EPL and UEFA postponed their football competitions for the 2019/2020 season on 13 and March 18, 2020, respectively, roughly two and half months before the expected end date of the football calendar. However, the EPL and UEFA competitions restarted behind closed doors (without fans) amidst strict social-distancing protocols on June 17, 2020 and 10 August 2020, respectively.

Effectively, COVID-19 shifted the football calendar by three months, impacting the financial reporting for European clubs because their financial year-end is usually 30 June and in rare cases, 31 July. Therefore, clubs reported revenue and costs for the matches played between 30 June and 10 August 2020 (between seven to ten games depending on the club) and other financial transactions (such as player transfers)—which they would have typically reported in 2020—in their 2021 financial statements. Furthermore, fans were not allowed back into stadiums for the EPL games during the 2020/2021 season until the penultimate game, with arrangements for a maximum of 10,000 fans, translating to between 36 out of 38 league matches without fans.

Bond et al. (2022) and Maguire (2021) highlight in their assessment of the impact of the COVID-19 pandemic, that matchday revenue was the most affected revenue stream because of the lockdown preventing fans from attending matches. In 2019, European football generated €3.3bn in matchday revenue, representing 14% of total revenue (UEFA, 2021), while the EPL generated £680m in matchday revenue, representing 13% of total revenue (Bond et al., 2022). With fewer matches played without fans during the 2019/2020 season, compared with the 2020/2021 season, the severity of the loss of matchday revenue was shown in the 2021 financial statements (Maguire, 2021). For broadcast revenue, UEFA and the EPL agreed to broadcast deals for 2018–2021 worth €9.7bn (UEFA, 2019) and 2019–2022 worth £9.2bn (Ajuonuma, 2019), respectively, which include two years (2020 and 2021) of the COVID-19 pandemic disruption. However, with stadium audiences positively linked with the

size of television audiences (Buraimo, 2008), and matches not played at agreed dates, broadcast revenue rebates were agreed to be repaid to satellite television operators by UEFA and the EPL to ease cash flow shortfalls due to the subscriptions freezes the operators offered to their customers (Maguire, 2021).

For commercial revenue, Maguire (2021) believes the impact of the pandemic will vary across clubs depending on their agreements with the advertising and sponsorship partners. However, the COVID-19 pandemic negatively impacted every club because the clubs could not travel overseas for preseason tours, merchandise stores at the stadiums were closed, and advertisers did not benefit from a packed stadium (Bond et al., 2022).

An offshoot of the COVID-19 pandemic's impact on clubs' revenue is the ripple effect on player expenditure given the close relationship between the two variables—wages and transfer fees increase with revenue growth (Buraimo et al., 2006; Plumley et al., 2020). The improved management of the wage-to-revenue ratio was vital in European football in reversing the rising losses in the industry post-FFP (Caglio et al., 2023). Clubs and football players agree to contracts that generally span from one to six years. Despite the shortfall in revenue, only Arsenal in the English Premier League (EPL) and a handful of clubs in the English Football League (EFL) persuaded players to accept wage deferrals or cuts, while other clubs utilised the furlough scheme for non-playing staff (Maguire, 2021). Similarly, player transfers and selling players for profit, which became a significant business model change for some clubs to comply with FFP (Dimitropoulos & Scafarto, 2021; Özyayın, 2020) reduced because of the loss of revenue and most likely impacted profitability.

In response to the cash flow shortfall caused by the pandemic, the UK government introduced the Furlough Scheme to pay qualifying company employees and the Covid Corporate Financing Facility (CCFF) one-year loan. The total amount utilised—primarily for the salaries of non-playing staff—by EPL and EFL clubs from the Furlough Scheme was £13m (Scott, 2021). Liverpool, Bournemouth and Tottenham reversed their decision to use the scheme because of pressure from their fans, who insisted that the clubs pay the employees themselves (Maguire, 2021). Arsenal and Tottenham, receiving £120m and £175m, respectively, were the only two clubs that utilised the CCFF. Nevertheless, the CCFF is unlikely to mitigate the risk of financial distress in English football because of the size of the shortfall caused by the COVID-19 pandemic (Plumley et al., 2020).

Based on the above, this paper focuses on the impact of the COVID-19 pandemic on the financial performance of top English football clubs. This paper puts forward three hypotheses; first, we examine the impact of the pandemic on clubs' profitability as a result of the loss of revenue and the obligation of wages to players highlighted by Maguire (2021) and Bond et al. (2022). Therefore, the first hypothesis is.

H1. The profitability of top English football clubs has not significantly worsened because of the COVID-19 pandemic.

We also examine the COVID-19 pandemic's impact on the financial stability and indebtedness of the football clubs because of the reduced cash flow due to loss of revenue. Plumley et al. (2020) noted that the COVID-19 pandemic would likely further worsen the already existing financial instability in English football, based on their Z-Score analysis. Also, the reduced cash flow would reduce the clubs' ability to repay their debts.

Thus, hypotheses two and three are.

H2. Financial stability of top English football clubs has not significantly worsened because of the COVID-19 pandemic.

H3. The indebtedness of top English football clubs has not significantly worsened because of the COVID-19 pandemic.

4. Data and methodology

We collected data from the top 36 English football clubs competing in

the EPL and EFL over 17 years between 2005 and 2021. We restricted the dataset to clubs that participated in the EPL, the top-flight league in England, at least once in the data period (2005–2021). All the clubs in our dataset were in the EPL or EFL as of 2021. Also, clubs that have not published financial statements since the pandemic were excluded from the dataset. All the financial data used in this study was hand-collected from the clubs' published financial statements and the notes to the accounts. The panel data sums up to 574 observations and we proxied profitability using the profit/(loss) before tax (PBT) figure from the financial statements, indebtedness using the cashflow to debt (CFTD) ratio (Caglio et al., 2023; Dimitropoulos & Scafarto, 2021), and financial stability with the Z2 score (Plumley et al., 2020) discussed below.

The three hypotheses in this paper were tested with the following model:

$$Y_{it} = \beta_1 Covid_t + Controls + FE + \varepsilon_{it} \quad (1)$$

For all the regressions used in testing the hypotheses, Y_{it} is the outcome variable while PBT , $CFTD$, and Z -Score are the outcome variables for H_1 , H_2 , and H_3 . The variable $Covid_t$ is a dummy variable that takes the value of 1 for the COVID-19 impacted years (2020 and 2021) and 0 for every other year. The $Covid_t$ variable captures the difference between the PBT for the COVID-19 impacted years and the other years in our dataset. $Controls$ represents the impact of control variables on PBT, and FE is the club (firm) fixed effect.

We include position, promotion, relegation, UCL and UEL, debt to assets, foreign ownership, matchday revenue percentage, and debt to assets ratio as control variables. *Position* is the final league ranking for a club in the domestic league. We expect the position coefficient to be positive because competition organisers distribute higher revenue to higher-ranking clubs and sporting success is likely to lead to increased profitability (Ahtainen & Jarva, 2020). *Promotion* and *relegation* are dummy variables taking the value of 1 when a club achieves promotion or gets relegated and 0 otherwise. Based on the existing literature (Jones & Cook, 2015; Leach & Szymanski, 2015; Peeters & Szymanski, 2014; Ruta et al., 2019; Szymanski & Smith, 1997; Szymanski & Valletti, 2010), we expect a positive coefficient for *promotion* and a negative coefficient for *relegation* because of the increase and decrease in revenue for promoted and relegated clubs respectively. *UCL* and *UEL* are dummy variables taking the value of 1 for any club participating in either of UEFA's competitions, and 0 otherwise. We expect the UCL and UEL coefficients to be positive, especially in the post-FFP period, because the evidence in the literature (Caglio et al., 2023; Dimitropoulos & Scafarto, 2021; Francois et al., 2022; Özyayın, 2020) suggests improved profitability of clubs participating in UEFA competitions. *Foreign ownership* is also a dummy variable taking 1 for clubs whose owners are non-British and 0 otherwise. Some studies (Rohde & Breuer, 2016; Wilson et al., 2013) suggest that foreign-owned clubs are more likely to be more loss-making because they tend to spend more on player-related expenditure due to a win-maximizing objective. However, other studies (Plumley et al., 2022, pp. 1–16) suggest that foreign owners have varying objectives with some favouring profit maximization. Finally, debt to assets ratio and matchday revenue percentage—the ratio of matchday revenue to total income—are club size and matchday revenue dependent variables.

We do not include a variable for CCFF because only two clubs accessed it and they repaid the loans within three months. We also exclude the furlough scheme from our analysis because £13m—which is immaterial—was the total amount accessed by the clubs. Additionally, the information on the clubs and the amount they received can only be obtained via a freedom of information request.

To test the impact of the COVID-19 pandemic on financial stability, the second hypothesis (H_2), we calculate the mean Z-Scores for the clubs in our dataset pre and post-COVID-19. The variations of the Z-score (Z-score, Z1 score, and Z2 score) developed by Altman (1968, 2013) are widely recognized and accepted measures for predicting financial distress or classifying financial stability in various industries such as

Table 1
Top English football clubs profitability Descriptive Statistics 2005–2021

Variables	Full sample					Pre-Covid-19 (Two years)				Covid-19 (Two years)				
	Mean	St.Dev.	Max	Min	Obs	Mean	St.Dev.	Max	Min	Mean	St.Dev.	Max	Min	Diff
Commercial	27.89	49.28	279.04	0.42	530	39.41	66.74	276.10	0.78	44.51	73.88	279.04	0.85	5.10
Matchday	19.89	26.39	154.29	0	530	23.37	31.68	154.29	2.77	10.33	20.16	94.53	–	–3.04**
Broadcast	55.76	56.15	297.45	0.02	530	90.48	74.44	260.79	1.42	88.36	74.87	297.45	2.84	–2.12
Player Sales Profit(Loss)	11.48	17.95	142.65	–12.69	574	22.19	28.13	123.85	–0.14	18.75	23.49	142.65	–1.44	–3.44
Total Income	111.36	126.53	655.13	4.50	574	179.23	176.70	655.13	9.40	165.65	163.04	641.16	7.94	–13.58
Wages	65.73	66.32	354.69	3.55	574	99.50	82.99	332.36	5.81	108.79	95.10	354.69	7.86	9.29
Transfer fees amortisation	22.62	29.02	170.01	0.02	574	39.82	38.37	170.01	0.30	45.73	43.03	164.43	0.48	5.91
Total Expenses	118.13	124.21	636.88	7.09	574	181.05	158.59	636.88	10.30	194.27	173.23	630.02	11.90	13.22
PBT	–9.12	34.21	138.91	–319.17	574	–3.36	41.19	138.91	–115.64	–31.83	41.86	42.50	–168.92	–8.46**

Notes: All variables are in millions of pounds (£) ** 5% significance level.

manufacturing (Ko et al., 2017; Sareen & Sharma, 2022), hospitality (Goh et al., 2022) and financial services (McCarthy, 2017). To the best of our knowledge, only Barajas and Rodriguez (2014) and Plumley et al. (2020) have analyzed the likelihood of financial distress in the football industry using Z-scores. It is however, worthy of note that Plumley et al. (2020) study found that 83% of EPL and EFL clubs were in the high-risk category before the COVID-19 pandemic.

The first two Z-scores (Z and Z1) are unsuitable for our analysis because they apply to publicly listed companies—most football clubs in England are privately held—and manufacturing companies (Altman, 2013) respectively. Thus, we calculate and analyze the Z2 score for the clubs in our dataset for this study.

The calculation of the Z2 scores is as follows:

$$Z2 = 6.56(X_1) + 3.26(X_2) + 6.72(X_3) + 1.05(X_4)$$

Where.

- X_1 = Working Capital/Total Assets
- X_2 = Retained Earnings/Total Assets
- X_3 = Earnings Before Interest and Taxes (EBIT)/Total Assets
- X_4 = Equity/Total Liabilities.

Altman (2013) classifies companies into four categories based on their Z-scores: above 3 Z-score as no business risk, between 2.7 and 3 as

requiring monitoring, between 1.8 and 2.7 as requiring detailed analysis of financial problem, and below 1.8 as high risk of bankruptcy.

5. Empirical results

5.1. Covid and profitability

Table 1 below shows the profitability descriptive statistics for the data set.

Table 1 presents our dataset's profitability descriptive statistics for the top English football clubs for the entire period of 2005–2021, the two-year pre-COVID-19 period, 2018 and 2019, and the two-year COVID-19 period, 2020 and 2021. Commercial revenue is the only source of revenue that increased post-COVID-19 with an average of £44.51m compared to £39.41m the two years before the pandemic. As expected, matchday revenue reduced significantly with an average of £10.33m, down from £23.23m pre-pandemic, with some clubs even reporting £0m matchday revenue. There was no significant change in average broadcast revenue pre-COVID-19 and during COVID-19, but it is worth noting that the highest broadcast revenue of £297.45m during COVID-19 was more than the £260.79m pre-COVID-19 due to Manchester City's success in the EPL and the UCL. Matchday revenue saw the only statistically significant change in the revenue sources.

The average profit from player transfers fell by £3.44m to £18.75m during the pandemic from £22.19m pre-COVID-19. However, the

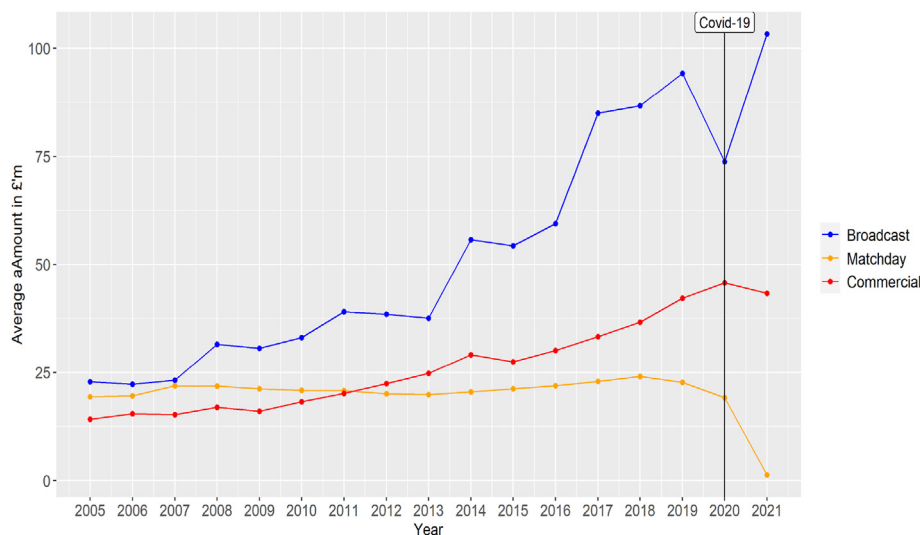


Fig. 1. Top English Club's football revenue sources.

Notes: The author created this figure from the information in the dataset. Fig. 1 shows the annual progress of the three primary sources of revenue for the clubs in our dataset. The black line indicates the beginning of COVID-19.

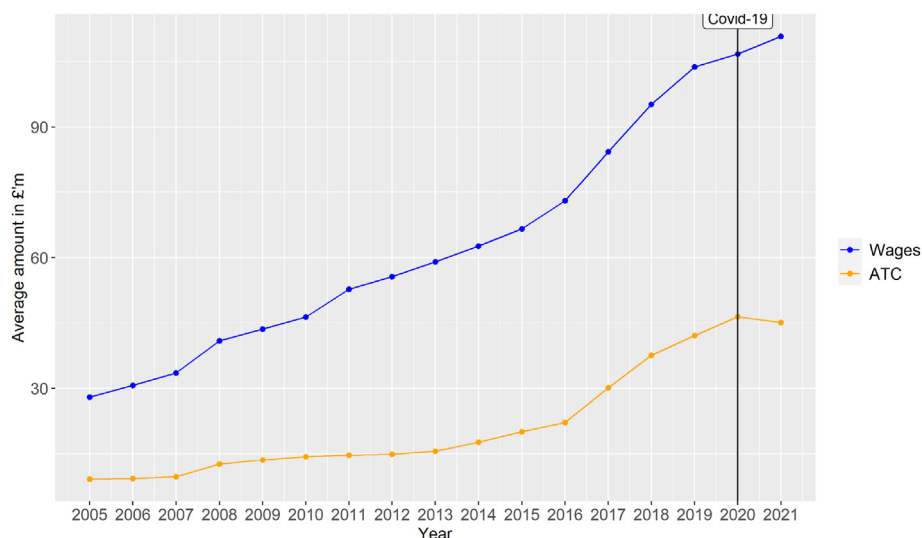


Fig. 2. Top English Club's annual player-related expenditure.

Notes: The author created this figure from the information in the dataset. Fig. 2 shows the annual progress of wages and annual transfer fees charge (ATC) of the clubs in our dataset. The black line indicates the beginning of COVID-19.

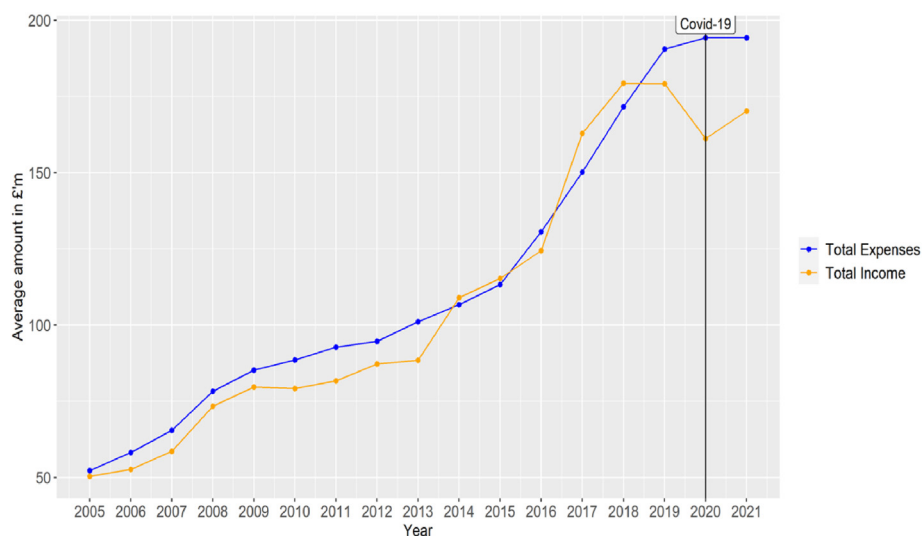


Fig. 3. Top English Club's annual total income and expenses.

Notes: The author created this figure from the information in the dataset. Fig. 3 shows the annual progress of our dataset's total expenses and income for the clubs. The black line indicates the beginning of COVID-19.

maximum figure of £142.65m during the pandemic exceeded the pre-COVID-19 figure of £123.85m as a result of Chelsea's outgoing transfers in 2020. The changes in the sources of revenue and profit from player transfers decreased the clubs' average total income by £13.58m to £165.65m during the pandemic from £178.23m pre-COVID-19. The decrease in total income is statistically insignificant.

The average wages and the transfer fees amortisation slightly increased to £108.79m and £45.73m during the COVID-19 pandemic from £99.50m and £39.82m pre-COVID-19, respectively. For wages, only a few clubs succeeded in agreeing on wage cuts or deferrals with players, and because the contracts usually span more than a year, the majority had to fulfill their obligations. Wages and transfer fees amortisation account for most of a club's expenses and as such, their increase resulted in a £13.22m growth in the average total expenses to £194.27m during the pandemic from £181.05m pre-COVID-19.

In Fig. 1, broadcast and commercial revenue grew between 2005 and 2019 because of the upward negotiation of television rights deals and

increased commercial activity, respectively. The sharp dip in broadcast revenue for 2020 and the subsequent increase in 2021 is due to clubs reporting the broadcast revenue for football matches postponed in the 2019/2020 season and the 2020/2021 matches in their 2021 financial statements.

Also, Fig. 1 shows that matchday revenue did not significantly increase between 2005 and 2019 because of stadium-size constraints and the reluctance of clubs to increase the price of match tickets. As a result of the COVID-19 pandemic, the English Football Association and UEFA mandated clubs to play their outstanding 2020 and 2021 fixtures behind closed doors. Thus, without fans attending these football matches, matchday revenue fell in 2020 and 2021.

Fig. 2 shows that wages increased yearly between 2005 and 2021 due to the correlation between wage expenditure and on-field success (Franck & Nüesch, 2011; Hall et al., 2002; Szymanski, 2003) and the obligatory nature of contracts with players. Similarly, the annual transfer fees grew consistently from 2005, peaked in 2020 but then fell slightly in

Table 2
Covid-19 impact on PBT regressions.

	PBT						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Covid-19	-26.02*** (5.50)	-26.49*** (5.22)	-29.32*** (5.49)	-31.06*** (6.20)	-28.39*** (7.72)	-31.18*** (9.80)	-6.43 (7.29)
Promotion	-	8.78** (3.18)	8.48** (3.27)	11.77*** (3.85)	12.27*** (3.85)	11.76*** (4.19)	9.65** (4.20)
Relegation	-	-4.30 (3.21)	-4.03 (3.36)	-8.63** (4.35)	-9.15** (4.36)	-11.11** (5.54)	-8.89* (4.87)
Position	-	-0.03 (0.24)	0.03 (0.25)	-0.12 (0.26)	-0.15 (0.26)	-0.26 (0.43)	0.17 (0.34)
Debt to Assets	-	-1.41 (1.78)	-1.10 (1.65)	-0.40 (1.35)	-0.37 (1.10)	-0.03 (1.14)	-0.52 (1.20)
UCL	-	-	-2.98 (23.93)	-3.23 (22.19)	1.31 (20.97)	0.89 (20.13)	-1.09 (20.83)
UEL	-	-	-12.39 (17.05)	-13.20 (17.70)	-13.36 (16.45)	-13.05 (16.74)	-14.86 (16.35)
FFP*UCL	-	-	46.83** (17.92)	31.58** (14.83)	34.19*** (12.84)	34.35*** (11.93)	38.91*** (11.17)
FFP*UEL	-	-	17.11 (16.78)	12.25 (17.21)	12.71 (16.24)	11.81 (16.40)	15.76 (16.27)
Sales Profit (Loss)	-	-	-	0.73*** (0.18)	0.79*** (0.25)	0.76*** (0.20)	0.70*** (0.20)
Covid-19 * Sales Profit (Loss)	-	-	-	-0.18 (0.34)	-0.28 (0.43)	-0.25 (0.22)	-0.08 (0.24)
Foreign Ownership	-	-	-	-	-15.97*** (4.60)	-18.36*** (5.24)	-17.92*** (4.87)
Covid-19 * Foreign Ownership	-	-	-	-	3.84 (8.48)	3.81 (8.67)	3.11 (7.28)
Matchday %	-	-	-	-	-	-13.23 (19.74)	-6.62 (18.63)
Covid-19 * Matchday %	-	-	-	-	-	7.90 (17.55)	-40.16* (22.23)
Covid-19 * EPL	-	-	-	-	-	-	-42.47*** (5.90)
Club fixed effect	✓	✓	✓	✓	✓	✓	✓
Observations	574	574	574	574	574	528	574
R ²	0.257	0.268	0.346	0.433	0.457	0.462	0.489
Within R ²	0.077	0.091	0.188	0.295	0.325	0.329	0.366

Notes: Robust standard errors are clustered at club and year levels. All numbers in the table are presented in millions of £. Significance levels denoted as *p < 0.1, **p < 0.05, and ***p < 0.01.

2021 because of the COVID-19-induced revenue shortfall.

Fig. 3 shows that total expenses grew consistently between 2005 and 2020 and plateaued in 2021 as a result of the reduced transfer activity of clubs because of the impact of COVID-19 and shortfall in cash flow. Similarly, total income grew from 2005 to 2019, plateaued and fell sharply in 2020 due to the loss of matchday revenue and the recognition of broadcast revenue for 2020 football matches postponed due to the pandemic in 2021. There was a slight rebound in 2021, but total income did not return to the 2019 pre-COVID-19 level. Thus, the losses reported in 2020 and 2021 are due to the loss of income caused by the COVID-19 pandemic.

5.1.1. Regression analysis

Table 2 presents the regression results and captures the average impact of COVID-19 in 2020 and 2021 on the profitability of top English football clubs compared to the other years in our dataset. The variables of interest in all the regressions in Table 2 are the dummy variables, COVID-19. The coefficient for the COVID-19 variable in the base regression in column 1 of Table 2 is £26.02m LBT, which is statistically significant, indicating that the profitability of the top English football clubs worsened during the years affected by the COVID-19 pandemic.

Fig. 4 presents the annual changes in PBT and shows a sharp decline in PBT during the pandemic, which surpassed the levels in 2008 and 2009 that prompted UEFA to introduce FFP for clubs participating in its competitions. The LBT in 2020 tripled that of 2009, the next lowest LBT in the period.

We included control variables from the literature which are

determinants of profitability in columns 2 to 5 in Table 2 and the COVID-19 coefficient reduced further and remained statistically significant—the lowest LBT was £31.06m in column 4. The coefficient for promotion was positive and significant in all the columns, confirming evidence in the literature (Dimitropoulos & Scafarto, 2021; Leach & Szymanski, 2015; Plumley et al., 2020; Ruta et al., 2019) that promotion is a positive determinant of profitability. The relegation coefficient is negative in all columns but only significant in columns 4 to 7 of Table 2, indicating that clubs make more losses when relegated. The non-significance of the relegation coefficient (columns 2 to 3) and its relatively small size (columns 4 to 7) are likely to be because of the parachute payments that relegated clubs receive from the EPL (Wilson et al., 2018, 2022).

Clubs participating in the UCL and UEL were more loss-making than non-participating clubs throughout the period though the coefficients in columns 3 to 7 in Table 2 are insignificant. However, in line with findings in the literature (Ahtiainen & Jarva, 2020; Caglio et al., 2023; Dimitropoulos & Scafarto, 2021; Francois et al., 2022; Özyaydin, 2020), clubs participating in the UCL and UEL were more profitable after UEFA introduced FFP in 2011, although only the coefficient of the former (UCL*FFP) is statistically significant. A possible reason for the insignificance of the UEL during the FFP coefficient is that the revenue from playing in the UEL is less than the UCL's. Also, UEL clubs would have aimed to qualify and invested accordingly for the UCL but missed the competition. The increased profitability suggests that FFP achieved its goal of improving the profitability of clubs participating in UEFA's competitions. The sales profit/(loss) coefficient was positive and significant, suggesting that selling players improved profitability. However,

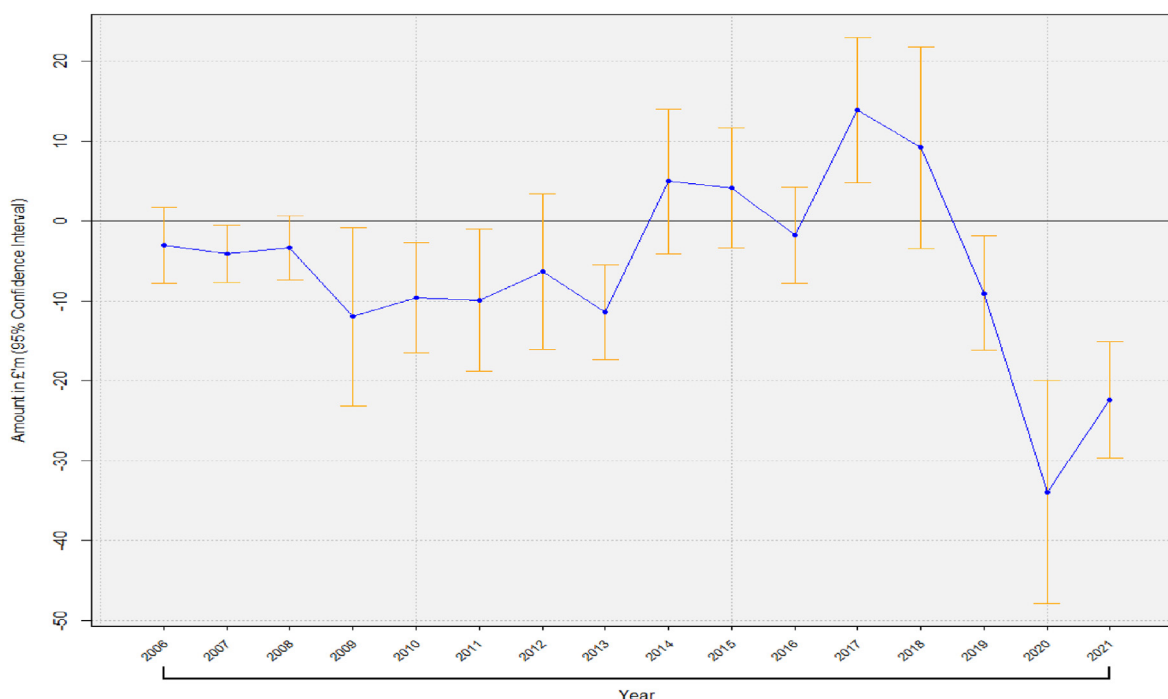


Fig. 4. Top English Club's annual variation in average PBT

Notes: The black horizontal line indicates the statistical significance. The yellow candles determine if the PBT is significant. For example, if both ends of the yellow line are below 0, the PBT is statistically significant at 5%.

the sales profit/(loss) coefficient during the COVID-19 pandemic is negative and statistically insignificant. A possible explanation for clubs making losses on player sales is that they sold players for lower transfer fees, recognising the limited budgets of the buying clubs because of the loss of revenue caused by COVID-19.

The foreign ownership coefficient was negative and statistically significant in columns 5 to 7 of Table 2. This finding seems to confirm evidence in the literature (Jones & Cook, 2015; Rohde & Breuer, 2016, 2018; Wilson et al., 2013) that foreign-owned clubs are more loss-making than their British counterparts. However, a look at the data indicates outliers on both ends of the profitability spectrum for foreign-owned clubs. For example, Chelsea, owned by Roman Abramovich had a cumulative loss of £1.1bn, the highest losses in our dataset. Chelsea, which represents 6% of the foreign-owned clubs population in our dataset, accounted for 25% of the population's £4.3bn cumulative loss. In contrast, Manchester United and Arsenal (both foreign-owned) under the Glazer and Korenke families had cumulative profit of £147m and £170m respectively, with only Tottenham (non-foreign owned) having a higher profit of £320m in the period. This confirms Plumley et al. (2022, pp. 1–16) suggestion that foreign-owned clubs pursue varying objectives.

Nevertheless, the coefficients for foreign ownership during COVID-19, though insignificant, show that, on average, foreign-owned clubs were £2.33m more profitable than their British-owned counterparts. A possible explanation is that five of the Top-Six clubs were foreign-owned during COVID. The Top-Six clubs, more often than not, qualify for UEFA competitions and benefit from global brands seeking sponsorship and advertising partnership which translates to higher commercial revenue. During the COVID-19 years, the five foreign-owned Top-Six clubs generated £2.06bn (accounting for 66%) of the £3.1bn commercial revenue for the clubs 36 clubs in our dataset.

The matchday percentage coefficient is negative in columns 6 and 7 of Table 2, indicating that the higher the reliance on matchday revenue, the more losses a club makes. Furthermore, we investigated which clubs were most affected by COVID-19 by including the interaction of Covid-19 and EPL in column 6 of Table 2. The coefficient for the COVID-19 and EPL interaction variable in column 7 of Table 2 is an LBT of £42.47m, which is

Table 3

Covid-19 changes in the EPL and EFL's total income and expenses.

	Variable	Pre-Covid-19 average	Covid-19 average	Difference
EPL	Total Income	282.95	263.31	19.64
	Total Expenses	270.75	302.79	-32.04
EFL	Total Income	49.57	46.63	2.94
	Total Expenses	68.90	62.01	6.89

Notes: All amounts in Table 3 are in millions of £.

statistically significant, while the standalone COVID-19 variable was a statistically insignificant LBT of £6.43m; this implies that EPL clubs were the most affected by the pandemic.

An explanation is that EPL clubs lost more income than EFL clubs, and their expenses grew while EFL clubs' expenses reduced during COVID-19, see Table 3. In addition, the interaction of Covid-19 and matchday percentage in column 7 of Table 2—which was a PBT of £7.90m and insignificant in column 6—is an LBT of £-40.16m and is statistically significant. This indicates that EPL clubs reliant on matchday revenue were the most impacted by COVID-19.

Nevertheless, the variable capturing the impact of COVID-19 in columns 1 to 6 of Table 2, was negative and statistically significant. Hence, we found evidence to reject the null hypothesis that COVID-19 has not worsened the profitability of top football clubs in England. We attribute the deterioration in profitability to the loss of matchday revenue, especially that of EPL clubs.

Table 4 below is the indebtedness and financial stability descriptive statistics for our data set.

Table 4 presents our dataset's indebtedness and financial stability descriptive statistics for the top English football clubs. All variables, except sales and EBIT, in Table 4 are balance sheet items whose figures are a combination of historical and current-year transactions. The average retained losses of £140.43m during COVID-19 worsened by 55% from the pre-COVID-19 average of £90.41m. The highest percentage change between the pre-COVID-19 and COVID-19 years was the 2472% decline from an average EBIT of £1.08m pre-COVID-19 to -£25.59m

Table 4
Indebtedness and financial stability descriptive statistics.

Variables	Full sample					Pre-Covid-19 (Two years)					Covid-19 (Two years)				
	Mean	St.Dev.	Max	Min	Obs	Mean	St.Dev.	Max	Min	Obs	Mean	St.Dev.	Max	Min	Diff
Retained earnings	-76.39	187.73	428.25	-1080.48	574	-90.41	235.84	422.28	-953.41	574	-140.43	252.72	345.08	-1080.48	-50.02
Sales	99.13	115.63	627.12	4.48	574	156.38	159.60	627.12	7.31	574	145.23	149.73	571.09	6.86	-11.15
EBIT	-5.58	34.80	157.08	-318.60	574	1.08	43.40	157.08	-115.64	574	-25.59	41.37	42.50	-168.92	-26.67**
Current asset	62.07	134.02	972.72	0.53	574	97.38	162.57	950.91	2.92	574	92.78	136.41	755.33	2.02	-4.60
Current Liability	86.97	91.83	551.80	2.33	574	138.96	112.12	484.43	5.63	574	167.21	122.09	551.80	4.44	28.25
Total asset	202.65	347.43	2019.32	0.90	574	311.30	450.67	2019.32	10.91	574	325.92	455.71	1873.03	11.07	14.62
Total Liabilities	175.15	240.86	1533.22	4.64	574	243.65	299.73	1290.78	8.94	574	287.61	329.29	1533.22	7.12	43.96
Z2	-8.19	12.82	9.37	-129.40	574	-7.18	11.28	6.32	-45.53	574	-9.87	13.59	4.03	-66.13	-2.69
Cash flow	9.28	36.28	245.05	-86.69	549	14.56	54.13	245.05	-86.69	549	3.03	35.53	113.13	-63.66	-11.53
Debt	152.08	231.90	1595.41	3.66	574	211.30	296.33	1590.80	6.20	574	253.21	336.49	1595.41	4.44	41.91
CFTD	2.1%	30.3%	277.8%	-199.9%	549	-2.8%	28.6%	47.3%	-143.9%	549	-2.9%	44.8%	277.8%	-106.2%	-0.1%
Net Transfer Receipt(Payment)	-17.38	36.68	96.71	-249.67	574	-34.69	57.38	40.55	-249.67	574	-27.07	51.14	96.71	-189.46	7.62

during COVID-19. Average current liabilities exceeded current assets in the entire sample, pre-COVID-19, and the difference between the variables reached an all-time high of £74.43m during COVID-19 when the former was £167.21m, and the latter, £92.78m. On the contrary, the average total assets exceeded total liabilities in the entire sample, pre-COVID-19, with the difference between the variables reducing by £38.31m during COVID-19 when total assets were £325.92m and total liabilities £287.61m. Consequently, the average Z2 score declined to -9.87 during COVID-19 from -7.18 pre-COVID-19.

The average cash flow declined by £11.53m to £3.03m post-COVID-19 from £14.56m pre-COVID-19. In contrast, the average debt increased by £41.91m to £253.21m during COVID-19 from £211.30m pre-COVID-19. The changes in cash flow and debt resulted in the average CFTD falling from -2.8% pre-COVID-19 to -2.9% during COVID-19. Finally, net transfer fees paid for players fell during the COVID-19 years from £34.69m to £27.07m, indicating that clubs were cautious in their investment because of reduced revenue and cash flow and uncertainty of when normality would resume.

Fig. 5 represents our dataset's annual average Z2 scores for the clubs and shows fluctuations over the period. The dip in the first year of COVID-19, 2020, was the joint lowest average Z2 score together with 2007. However, the average Z2 score recovered slightly in 2021.

Fig. 6 represents our dataset's annual average CFTD for the clubs. There was a downward trend from 2005 to 2010, where the average CFTD became negative. However, this reversed with CFTD trending upward between 2011 and 2017, coinciding with the introduction of FFP. The average CFTD consecutively in 2018 and 2019 before surprisingly rising in the first year of COVID-19. In 2021, the average CFTD fell to -0.16, the lowest in the period.

5.1.2. Regression analysis

Table 5 presents the regression result, which captures the impact of COVID-19 on the CFTD and Z2 scores of top English clubs in our data. For CFTD, the COVID-19 coefficient in columns 1 to 6 is negative, indicating a reduced capacity for clubs to repay their debt during COVID-19. However, the fall in CFTD is only statistically significant in column 6 of Table 5, where we disaggregate the impact of COVID-19 between EPL and EPL, and we explain this below. For the Z2, the COVID-19 coefficient was negative and statistically insignificant in all the columns in Table 5. The result indicates that while the financial stability of the top English clubs worsened during COVID-19, it was not significantly different from the other years during the period. A possible explanation for the statistical insignificance of CFTD and Z2 is that while revenue was reduced during COVID-19, clubs adjusted their transfer budgets to cope with the loss of revenue. Table 4 above indicates that net transfer spending on players, a significant cash outflow for clubs, reduced during COVID-19 by £7.62m.

Also, Plumley et al. (2020) found that 83% of clubs in their study were at a high risk of bankruptcy. In Table 6, 90% and 92% of clubs in our sample were at risk of bankruptcy pre-COVID-19 and during COVID-19 respectively. This means that clubs were already in a precarious situation before the marginal deterioration during COVID-19. Furthermore, Fig. 7 below confirms that the clubs were cautious in their spending on purchasing players compared to the pre-COVID-19 trend because of uncertainty on how long the pandemic will persist.

We find that promotion to the EPL improves the CFTD and Z2 scores of clubs, confirming evidence in the literature (Dimitropoulos & Scafarto, 2021; Leach & Szymanski, 2015; Plumley et al., 2020; Ruta et al., 2019). However, promotion was only statistically significant for CFTD in columns 2 to 4. The relegation coefficient is negative in all columns of CFTD but statistically significant only in columns 5 and 6. Surprisingly, we find that the Z2 score improves for relegated clubs, and we attribute this to the impact of parachute payments (Plumley et al., 2020; Wilson et al., 2018, 2022) and the clubs selling their players upon relegation, which improves their cash position (current and total assets). We find evidence that competing in the UCL is a positive and significant determinant of

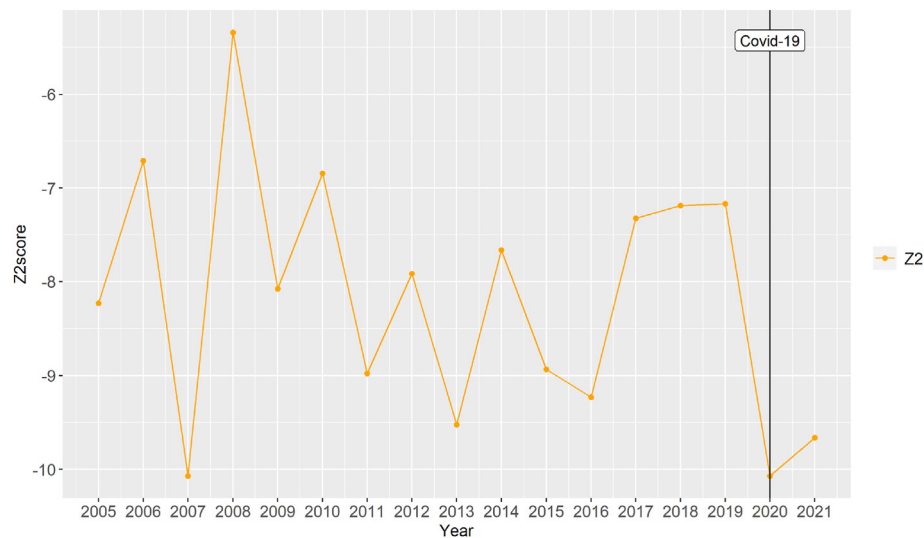


Fig. 5. Top English Club's average Z2 Score.

Notes: The author created this figure from the information in the dataset. Fig. 5 shows the annual progress of the Z2 score for the clubs in our dataset. The black line indicates the year when COVID-19 began.

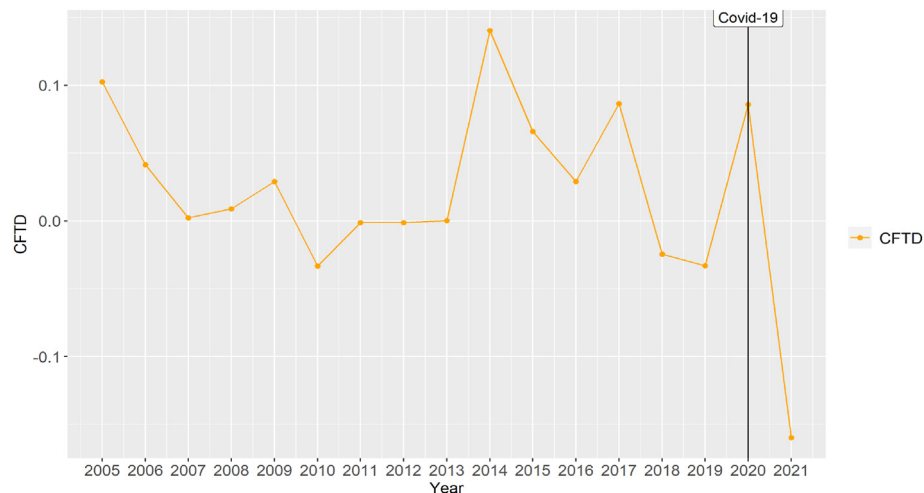


Fig. 6. Top English Club's average CFTD

Notes: The author created this figure from the information in the dataset. Fig. 6 shows the annual progress of the CFTD score for the clubs in our dataset. The black line indicates the year when COVID-19 began.

CFTD and Z2 (though weak evidence for Z2), while competing in the UEL is negative for CFTD (in columns 3 and 4) and positive for Z2, with both insignificant. The other significant determinant of CFTD and Z2 is foreign ownership, and its coefficient is negative, indicating that foreign-owned clubs are less able to pay off their debt, with their financial stability worse off compared with their British counterparts.

The matchday percentage coefficient is negative and statistically insignificant in all columns of Table 5 for both CFTD and Z2. However, the COVID-19 and matchday interaction coefficients are positive, indicating that the CFTD and Z2 during the pandemic are higher for clubs that depend more on matchday revenue. Finally, the COVID-19 and EPL interaction coefficients are positive and statistically significant for CFTD and Z2, indicating that EFL clubs' indebtedness and financial stability were the most impacted by the pandemic. This finding is consistent with Plumley et al. (2020) study that showed that EFL clubs are less financially stable than EPL clubs.

Nevertheless, the variable capturing the impact of COVID-19 on top English clubs, COVID-19 in Table 5, was not statistically significant for CFTD and Z2. Hence, we concluded that we do not find evidence to reject

the null hypothesis that COVID-19 has not worsened the indebtedness and financial stability of top clubs in England.

6. Conclusion

The motivation for this paper was to investigate the impact of the COVID-19 pandemic on the financial performance of top English football clubs, specifically regarding profitability, indebtedness, and financial stability. The existing literature has focused on the pandemic's impact on on-field performance (home advantage and referring decisions), stadium attendance and spread of the virus, stock market returns for listed clubs, and the prospective implications on clubs' financial performance. Thus, this paper contributes to the literature by providing empirical evidence on the financial impact of COVID-19 on the football industry.

We proposed three hypotheses in this study which tested the impact of COVID-19 on the profitability, financial stability, and indebtedness of top English clubs. Drawing on financial information collected from the financial statements of 36 clubs between 2005 and 2021, we estimated the impact of COVID-19 with linear regressions. For profitability, our

Table 5
Covid-19 impact on CFTD and Z2 regressions.

	CFTD						Z2					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Covid-19	-0.051 (0.097)	-0.053 (0.093)	-0.054 (0.094)	-0.016 (0.068)	-0.145 (0.110)	-0.304* (0.145)	-1.88 (1.49)	-1.92 (1.40)	-1.98 (1.42)	-1.84 (3.47)	-3.54 (3.68)	-6.82 (4.27)
Promotion	–	0.083* (0.045)	0.083* (0.045)	0.087* (0.045)	0.071 (0.047)	0.074 (0.045)	–	0.75 (1.25)	0.74 (1.24)	0.82 (1.30)	0.33 (1.67)	0.47 (1.59)
Relegation	–	-0.046 (0.035)	-0.045 (0.035)	-0.048 (0.033)	-0.086* (0.043)	-0.095** (0.043)	–	3.68** (1.16)	3.73** (1.16)	3.63** (1.19)	2.16 (1.52)	1.86 (1.33)
Position	–	0.011*** (0.003)	0.011*** (0.003)	0.011*** (0.003)	0.008*** (0.002)	0.006** (0.002)	–	0.37 (0.14)	0.37* (0.14)	0.37* (0.14)	0.28* (0.14)	0.23* (0.13)
UCL	–	–	0.157*** (0.036)	0.136* (0.050)	0.145** (0.062)	0.155** (0.062)	–	–	2.15* (0.90)	1.60 (1.10)	1.56 (1.32)	1.77 (1.33)
UEL	–	–	-0.010 (0.058)	-0.011 (0.058)	0.001 (0.057)	0.010 (0.059)	–	–	1.47 (1.43)	1.44 (1.38)	1.69 (1.31)	1.90 (1.31)
FFP*UCL	–	–	-0.007 (0.045)	0.024 (0.054)	-0.001 (0.068)	-0.024 (0.070)	–	–	1.70* (0.75)	2.55* (1.15)	2.01 (1.67)	1.50 (1.60)
FFP*UEL	–	–	0.082 (0.060)	0.089 (0.060)	0.065 (0.059)	0.045 (0.060)	–	–	-0.12 (1.51)	0.07 (1.42)	-0.87 (1.59)	-1.33 (1.55)
Foreign Ownership	–	–	–	-0.133* (0.052)	-0.162** (0.057)	-0.162** (0.057)	–	–	–	-3.99** (1.34)	-4.85*** (1.47)	-4.84*** (1.51)
Covid-19 * Foreign Ownership	–	–	–	-0.007 (0.066)	0.012 (0.074)	0.020 (0.093)	–	–	–	1.22 (3.86)	0.99 (3.62)	0.88 (3.43)
Matchday %	–	–	–	–	-0.387 (0.274)	-0.430 (0.275)	–	–	–	–	-10.73 (8.27)	-11.71 (8.19)
Covid-19 * Matchday %	–	–	–	–	0.746 (0.527)	1.014* (0.527)	–	–	–	–	0.28 (9.44)	6.83 (10.39)
Covid-19 * EPL	–	–	–	–	–	0.226** (0.095)	–	–	–	–	–	4.95** (2.23)
Club fixed effect	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Observations	549	549	549	549	505	505	574	574	574	574	529	529
R ²	0.149	0.219	0.226	0.251	0.251	0.264	0.497	0.528	0.531	0.542	0.570	0.573
Within R ²	0.003	0.085	0.095	0.122	0.131	0.146	0.005	0.068	0.073	0.095	0.103	0.111

Notes: Robust standard errors are clustered at club and year levels. All numbers in the table are presented in millions of £. Significance levels denoted as *p < 0.1, **p < 0.05, and ***p < 0.01.

Table 6
Z2 score classification.

Classification	Z2 Range	EPL and EFL		EPL		EFL	
		Pre-Covid	Covid	Pre-Covid	Covid	Pre-Covid	Covid
No business risk	>3	31	2	28	2	3	0
Monitoring	2.7–2.99	5	1	4	0	1	1
Detailed analysis	1.8–2.69	16	3	14	2	2	1
Risk of bankruptcy high	<1.8	451	65	231	35	220	30
Total		503	71	277	39	226	32
% in high risk		90%	92%	83%	90%	97%	94%

Notes: The Z2 score for EPL and EFL was 90% pre-COVID-19 and 92% during COVID-19, indicating that most of the clubs were at a high risk of bankruptcy. This is consistent with [Plumley et al. \(2020\)](#) finding where most (83% specifically) clubs in English football had a high risk of bankruptcy.

empirical findings show that during the pandemic, the profitability of top English clubs worsened compared to non-COVID-19 years due to the loss of matchday revenue, with EPL clubs being the most impacted. The deterioration in profitability was statistically significant. We found that selling players during the pandemic resulted in losses for the selling club, possibly because of the limited budgets of the buying club and the selling club requiring cash inflows to deal with financial obligations that could not be covered with the reduced revenue caused by the pandemic. Furthermore, we found that foreign-owned clubs that are usually more loss-making than British-owned clubs were less impacted during the pandemic because they earn more commercial revenue. We note that five of the six Top-Six clubs are foreign-owned and they qualify for European competitions which increases their commercial revenue bargaining power.

For indebtedness and financial stability, we found that although they worsened as a result of COVID-19, the deterioration was not statistically significant. An explanation for the insignificance is that clubs reduced investments in player acquisition because of the loss of revenue and

uncertainty about how long the pandemic would persist. We also found that indebtedness and financial stability of EFL clubs were the most impacted by the pandemic, and that relegation improved clubs' financial stability, possibly because of parachute payments and the sale of players—a common occurrence once a club is relegated.

Our conclusion from the findings of this paper is that the COVID-19 pandemic, probably the worst shock football has faced, worsened the profitability of top English clubs, and caused them to be more likely to face financial distress, but they have come out of the pandemic with financial resilience. The findings of this paper are vital for the literature as we provide, to the best of our knowledge, the first empirical evidence of the financial impact of COVID-19, and policymakers as they provide evidence on the industry's resilience and information for regulators to strengthen it further. Specifically, the proposed independent regulator for English football could benefit from the findings of this paper as well as other sporting clubs and bodies trying to bring stability to their sport. We believe future research can provide more insight into the strategies that specific clubs or clusters of clubs adopted in surviving the impacts of

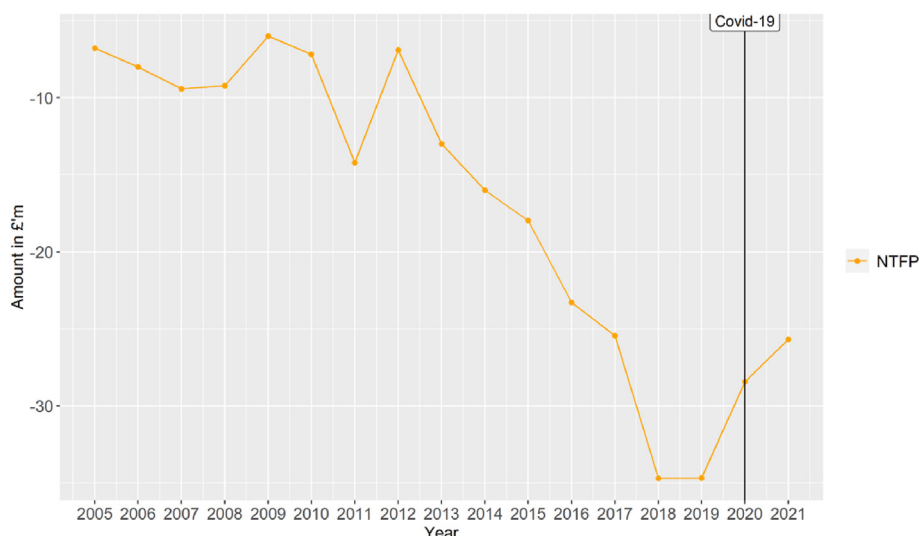


Fig. 7. Top English Club's average net transfer fees paid.

Notes: The author created this figure from the information in the dataset. Fig. 7 shows the annual progress of the net transfer fees paid (NTFP) score for the clubs in our dataset. The black line indicates the year when COVID-19 began.

COVID-19. Furthermore, future research can benefit from comparing football clubs' pre-COVID-19, during the COVID-19 pandemic, and post-COVID-19 financial performance to understand structural changes and behavioural patterns resulting from the pandemic.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

References

- Ahtiainen, S., & Jarva, H. (2020). Has UEFA's financial fair play regulation increased football clubs' profitability? *European Sport Management Quarterly*, 1–19.
- Ajuonuma, R. (2019). *Premier League rights value up 8% to £9.2bn on overseas income*, 22 May 2019 <https://media.sportbusiness.com/news/premier-league-rights-value-up-8-to-9-2bn-on-overseas-income/>.
- Almeida, C. H., & Leite, W. S. (2021). Professional football in times of COVID-19: Did the home advantage effect disappear in European domestic leagues? *Biology of Sport*, 38(4), 693–701.
- Altman, E. I. (1968). Financial ratios, discriminant analysis and the prediction of corporate bankruptcy. *The Journal of Finance*, 23(4), 589–609.
- Altman, E. I. (2013). Predicting financial distress of companies: Revisiting the Z-score and ZETA® models. In A. Bell, C. Brooks, & M. Prokopczuk (Eds.), *Handbook of research methods and applications in empirical finance*. Edward Elgar Publishing.
- Barajas, A., & Rodriguez, P. (2014). Spanish football in need of financial therapy: Cut expenses and inject capital. *International Journal of Sport Finance*, 9(1), 73–73.
- Bedir, F., Bozma, G., Turan, M., & Mizrak, O. (2022). Effects of COVID-19 on football stock market's return and uncertainty. *International Journal of Sport Finance*, 17(3).
- Bond, A. J., Cockayne, D., Ludvigsen, J. A. L., Maguire, K., Parnell, D., Plumley, D., Widdop, P., & Wilson, R. (2022). COVID-19: The return of football fans. *Managing Sport and Leisure*, 27(1–2), 108–118. <https://doi.org/10.1080/23750472.2020.1841449>
- Bryson, A., Dolton, P., Reade, J. J., Schreyer, D., & Singleton, C. (2021). Causal effects of an absent crowd on performances and refereeing decisions during Covid-19. *Economics Letters*, 198, Article 109664.
- Buraimo, B. (2008). Stadium attendance and television audience demand in English league football. *Managerial and Decision Economics*, 29(6), 513–523.
- Buraimo, B., Forrest, D., McHale, I. G., & Tena, J. d. D. (2022). Armchair fans: Modelling audience size for televised football matches. *European Journal of Operational Research*, 298(2), 644–655.
- Buraimo, B., Paramio, J. L., & Campos, C. (2010). The impact of televised football on stadium attendances in English and Spanish league football. *Soccer and Society*, 11(4), 461–474. <https://doi.org/10.1080/14660971003780388>
- Buraimo, B., & Simmons, R. (2008). Do sports fans really value uncertainty of outcome? Evidence from the English premier league. *International Journal of Sport Finance*, 3(3).
- Buraimo, B., & Simmons, R. (2015). Uncertainty of outcome or star quality? Television audience demand for English premier league football. *International Journal of the Economics of Business*, 22(3), 449–469.
- Buraimo, B., Simmons, R., & Szymanski, S. (2006). English football. *Journal of Sports Economics*, 7(1), 29–46. <https://doi.org/10.1177/1527002505282911>
- Butler, D., & Butler, R. (2023). Ghost games and ex-post viewing preferences for the English Premier League: Evidence from YouTube highlights. *Sports Economics Review*, 2, Article 100012.
- Caglio, A., Laffitte, S., Masciandaro, D., & Ottaviano, G. (2023). Has financial fair play changed European football? *Sports Economics Review*, 3, Article 100018.
- Cox, A. (2018). Spectator demand, uncertainty of results, and public interest: Evidence from the English Premier League. *Journal of Sports Economics*, 19(1), 3–30.
- Dimitropoulos, P., & Scafarto, V. (2021). The impact of UEFA financial fair play on player expenditures, sporting success and financial performance: Evidence from the Italian top league. *European Sport Management Quarterly*, 21(1), 20–38.
- Drewes, M., Daumann, F., & Follert, F. (2021). Exploring the sports economic impact of COVID-19 on professional soccer. *Soccer and Society*, 22(1–2), 125–137.
- Fischer, K., & Haucap, J. (2021). Does crowd support drive the home advantage in professional football? Evidence from German ghost games during the COVID-19 pandemic. *Journal of Sports Economics*, 22(8), 982–1008.
- Forrest, D., & Simmons, R. (2002). Outcome uncertainty and attendance demand in sport: The case of English soccer. *Journal of the Royal Statistical Society: Series D (The Statistician)*, 51(2), 229–241.
- Forrest, D., & Simmons, R. (2006). New issues in attendance demand: The case of the English football league. *Journal of Sports Economics*, 7(3), 247–266.
- Forrest, D., Simmons, R., & Buraimo, B. (2005). Outcome uncertainty and the couch potato audience. *Scottish Journal of Political Economy*, 52(4), 641–661.
- Franck, E. (2018). European club football after “five treatments” with financial fair play—time for an assessment. *International Journal of Financial Studies*, 6(4), 97.
- Franck, E., & Nüesch, S. (2011). The effect of wage dispersion on team outcome and the way team outcome is produced. *Applied Economics*, 43(23), 3037–3049.
- Francois, A., Dermit-Richard, N., Plumley, D., Wilson, R., & Heutte, N. (2022). The effectiveness of UEFA financial fair play: Evidence from England and France, 2008–2018. *Sport, Business and Management*, 12(3), 342–362. <https://doi.org/10.1108/SBM-03-2021-0024>
- Fühner, J., Schmidt, S. L., & Schreyer, D. (2021). Are diversified football clubs better prepared for a crisis? First empirical evidence from the stock market. *European Sport Management Quarterly*, 21(3), 350–373.
- Goh, E., Mat Roni, S., & Bannigiddamath, D. (2022). Thomas cook(ed): Using altman's z-score analysis to examine predictors of financial bankruptcy in tourism and hospitality businesses. *Asia Pacific journal of marketing and logistics*, 34(3), 475–487. <https://doi.org/10.1108/APJML-02-2021-0126>
- Grundy, T. (2004). Strategy and financial management in the football industry. *Strategic Change*, 13(8), 405–422. <https://doi.org/10.1002/jsc.696>
- Hall, S., Szymanski, S., & Zimbalist, A. S. (2002). Testing causality between team performance and payroll: The cases of major league baseball and English soccer. *Journal of Sports Economics*, 3(2), 149–168.
- Henderson, S. (2010). Football broadcasting: Tipping point or bleeding edge? *Soccer and Society*, 11(5), 614–626.
- Herold, E., Boronczyk, F., & Breuer, C. (2021). Professional clubs as platforms in multi-sided markets in times of COVID-19: The role of spectators and atmosphere in live football. *Sustainability*, 13(4), 2312.
- Hill, J. S., & Vincent, J. (2006). Globalisation and sports branding: The case of manchester united. *International Journal of Sports Marketing & Sponsorship*.
- Jones, A., & Cook, M. (2015). The spillover effect from FDI in the English Premier League. *Soccer and Society*, 16(1), 116–139.
- Kennedy, D., & Kennedy, P. (2021). English premier league football clubs during the covid-19 pandemic: Business as usual? *Soccer and Society*, 22(1–2), 27–34.

- King, A. (2010). After the crunch: A new era for the beautiful game in Europe? *Soccer and Society*, 11(6), 880–891.
- Ko, Y.-C., Fujita, H., & Li, T. (2017). An evidential analysis of Altman Z-score for financial predictions: Case study on solar energy companies. *Applied Soft Computing*, 52, 748–759. <https://doi.org/10.1016/j.asoc.2016.09.050>
- KPMG Football Benchmark. (2019). *Broadcasting revenue landscape – big money in the “big five” leagues*. 2022, 18 February <https://www.footballbenchmark.com/library/broadcasting-revenue-landscape-big-money-in-the-big-five-leagues>.
- Leach, S., & Szymanski, S. (2015). Making money out of football. *Scottish Journal of Political Economy*, 62(1), 25–50.
- Li, Z., Farmanesh, P., Kirikkaleli, D., & Itani, R. (2021). A comparative analysis of COVID-19 and global financial crises: Evidence from US economy. *Economic Research-Ekonomska Istraživanja*.
- MacCarthy, J. (2017). Using altman Z-score and beneish M-score models to detect financial fraud and corporate failure: A case study of enron corporation. *International Journal of Finance and Accounting*, 6(6), 159–166.
- Maguire, K. (2021). Covid-19 and football: Crisis creates opportunity. *The Political Quarterly*, 92(1), 132–138. <https://doi.org/10.1111/1467-923X.12961>
- McCarrick, D., Bilalic, M., Neave, N., & Wolfson, S. (2021). Home advantage during the COVID-19 pandemic: Analyses of European football leagues. *Psychology of Sport and Exercise*, 56, Article 102013.
- Olczak, M., Reade, J., & Yeo, M. (2021). *Mass outdoor events and the spread of an airborne virus: English football and covid-19*. Available at: SSRN 3682781.
- Özaydin, S. (2020). An empirical analysis of financial fair-play: The case of Russian Premier League. *Russian journal of economics*, 6(2), 196–212.
- Parnell, D., Bond, A. J., Widdop, P., & Cockayne, D. (2021). Football worlds: Business and networks during COVID-19. *Soccer and Society*, 22(1–2), 19–26. <https://doi.org/10.1080/14660970.2020.1782719>
- Peeters, T., & Szymanski, S. (2014). Financial fair play in European football. *Economic Policy*, 29(78), 343–390.
- Plumley, D., Ramchandani, G., Mondal, S., & Wilson, R. (2022). Looking forward, glancing back; competitive balance and the EPL. *Soccer & Society*, 23, 466–481.
- Plumley, D., Serbera, J.-P., & Wilson, R. (2020). Too big to fail? Accounting for predictions of financial distress in English professional football clubs. *Journal of Applied Accounting Research*, 22, 93–113.
- Ramchandani, G., & Millar, R. (2021). Investigating the “twelfth man” effect in five European domestic football leagues: A COVID-19 induced natural experiment. *Journal of Global Sport Management*, 1–15.
- Reade, J. J., Schreyer, D., & Singleton, C. (2021). Stadium attendance demand during the COVID-19 crisis: Early empirical evidence from Belarus. *Applied Economics Letters*, 28(18), 1542–1547.
- Reade, J. J., Schreyer, D., & Singleton, C. (2022). Eliminating supportive crowds reduces referee bias. *Economic Inquiry*, 60(3), 1416–1436.
- Reade, J. J., & Singleton, C. (2021). Demand for public events in the COVID-19 pandemic: A case study of European football. *European Sport Management Quarterly*, 21(3), 391–405.
- Rohde, M., & Breuer, C. (2016). The financial impact of (foreign) private investors on team investments and profits in professional football: Empirical evidence from the premier league. *Applied Economics and Finance*, 3(2), 243–255.
- Rohde, M., & Breuer, C. (2018). Competing by investments or efficiency? Exploring financial and sporting efficiency of club ownership structures in European football. *Sport Management Review*, 21(5), 563–581. <https://doi.org/10.1016/j.smr.2018.01.001>
- Ruta, D., Lorenzon, L., & Sironi, E. (2019). The relationship between governance structure and football club performance in Italy and England. *Sport, Business and Management: International Journal*, 10, 17–37.
- Sareen, A., & Sharma, S. (2022). Assessing financial distress and predicting stock prices of automotive sector: Robustness of altman Z-score. *Vision*, 26(1), 11–24. <https://doi.org/10.1177/0972262921990923>
- Scott, S. (2021). *Exclusive: Clubs in England's top two football leagues claim furlough cash at 'staggering' rate of £40m a year*. <https://www.itv.com/news/2021-03-24/exclusive-clubs-in-englands-top-two-football-leagues-claim-furlough-cash-at-staggering-rate-of-40m-a-year>.
- Sports Business Institute. (2019). TV rights in football - premier league analysis. Retrieved 15 February from <https://www.sbbarcelona.com/newsdetails/index/403>.
- Storm, R. K., & Nielsen, K. (2012). Soft budget constraints in professional football. *European Sport Management Quarterly*, 12(2), 183–201.
- Szymanski, S. (2003). The economic design of sporting contests. *Journal of Economic Literature*, 41(4), 1137–1187.
- Szymanski, S. (2010). The financial crisis and English football: The dog that will not bark. *International Journal of Sport Finance*, 5(1), 28–40.
- Szymanski, S., & Smith, R. (1997). The English football industry: Profit, performance and industrial structure. *International Review of Applied Economics*, 11(1), 135–153.
- Szymanski, S., & Valletti, T. M. (2010). Promotion and relegation in sporting contests. In *The comparative economics of sport* (pp. 198–228). Springer.
- Tovar, J. (2021). Soccer, world war II and coronavirus: A comparative analysis of how the sport shut down. *Soccer and Society*, 22(1–2), 66–74. <https://doi.org/10.1080/14660970.2020.1755270>
- UEFA. (2010). *Club licensing benchmarking report financial year 2009* (3rd ed.).
- UEFA. (2011). *Club licensing benchmarking report financial year 2010* (4th ed.) https://www.uefa.com/MultimediaFiles/Download/Tech/uefaorg/General/01/74/41/25/1744125_DOWNLOAD.pdf.
- UEFA. (2019). *Club licensing benchmarking report financial year 2018* (11th ed.).
- UEFA. (2021). *Club licensing benchmarking report financial year 2020* (12th ed.).
- Who. (2023). WHO Coronavirus (COVID-19) Dashboard [Covid dashboard] <https://covid19.who.int/>.
- Wilson, R., Plumley, D., Mondal, S., & Parnell, D. (2022). Challenging parachute payments and unmasking English football's finances. *Managing Sport and Leisure*, 27(1–2), 93–98.
- Wilson, R., Plumley, D., & Ramchandani, G. (2013). The relationship between ownership structure and club performance in the English Premier League. *Sport, Business and Management: International Journal*, 3, 19–36.
- Wilson, R., Ramchandani, G., & Plumley, D. (2018). Parachute payments in English football: Softening the landing or distorting the balance? *Journal of Global Sport Management*, 3(4), 351–368.
- Wunderlich, F., Weigelt, M., Rein, R., & Memmert, D. (2021). How does spectator presence affect football? Home advantage remains in European top-class football matches played without spectators during the COVID-19 pandemic. *PLoS One*, 16(3), Article e0248590.