

The financial impact of financial fair play regulation: evidence from the English Premier League

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The financial impact of financial fair play regulation: Evidence from the English premier league

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ABSTRACT

In response to the ailing financial situation of European football clubs, UEFA introduced Financial Fair Play (FFP) regulation in 2011 to guide clubs towards profitability and sustainability. In this study, we empirically test whether the break-even requirement (BER) of FFP has improved the financial performance of English Premier League (EPL) clubs exposed to the regulation. We find strong evidence that FFP has positively impacted the profitability of clubs exposed to the regulation as they are less loss-making than those not exposed to FFP. The improvement is attributed to better management of the income and expenses ratio rather than a fall in expenses. However we do not find evidence of an improvement in the clubs' sustainability. The results suggest that FFP has so far improved the profitability of EPL clubs exposed to the regulation by encouraging better financial management and business model modification for clubs. Therefore, club owners should maintain a financially prudent wage-to-revenue ratio and look to be more efficient in player trading.

1. Introduction

In 2010, despite rapid and consistent growth in revenue, football clubs in the top five European leagues – English, Spanish, German, Italian and French – reported €1.6bn in financial losses (a 33% increase from 2009) along with unprecedented debt levels of €19.1bn (a 1% increase from 2009) (UEFA, 2011). The contradictory financial situation was caused by football clubs, in search of sporting success, excessively investing in acquiring football players because of the correlation between on-field success and player-related expenditure (Forrest & Simmons, 2002; Hall, Szymanski, & Zimbalist, 2002; Szymanski, 2003). Against this backdrop, the regulator of European Football, The Union of European Football Associations (UEFA), announced the introduction of the Financial Fair Play (FFP) regulation in 2011 to curtail the poor financial health of clubs participating in its competitions – UEFA Champions League (UCL) and UEFA Europa League (UEL). The cornerstone of FFP is the break-even requirement (BER) that restricts losses to not more than €5 m across three years, encouraging them to operate within their financial means (Müller, Lammert, & Hovemann, 2012).

The literature predominantly focuses on FFP's impact on competitive balance and financial performance. Some studies (Budzinski, 2014; Sass, 2016) predicted that FFP would adversely impact competitive balance in European football because the BER restricts investment. However,

evidence from recent studies (Birkhäuser, Kaserer, & Urban, 2017; Gallagher & Quinn, 2020; Garcia-del-Barrio & Rossi, 2020; Plumley, Ramchandani, & Wilson, 2019; Ramchandani, Plumley, Boyes, & Wilson, 2018) showed varied impacts of FFP on competitive balance. However, it is essential to note that though the regulation's name contains the word “fair”, UEFA's primary aim was to improve financial performance.

Regarding FFP's primary objective, some studies (Caglio, Laffitte, Masciandaro, & Ottaviano, 2019; Franck, 2018) found evidence of improved profitability in Europe's top five leagues combined, driven predominantly by higher income and its prudent use by clubs. In contrast, indebtedness – which UEFA expects to be a byproduct benefit of FFP because no specific measure was introduced to address it – had not improved in the top five leagues (Caglio et al., 2019). However, competitiveness, economic reality and regulatory regimes differ across European leagues; thus, country-specific studies will reveal different insights into the impact of FFP and the behavioural changes of clubs. For example, Ahtiainen and Jarva (2020) disaggregated the top five leagues in their study and found significant improvement in only the Spanish league.

Francois, Dermot-Richard, Plumley, Wilson, and Heutte (2022) comparative study of England and France revealed that only the profitability of the former's clubs improved post-FFP, likely because of the

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proportion of revenue French clubs spent on wages post-FFP and the difference in the size of English clubs' broadcast revenue. French clubs spent more on wages post-FFP, possibly because their objective was to win European competitions, given their prior poor performance because of the financial regulation imposed by the French league pre-FFP. Broadcast revenue is the largest contributor to European clubs' revenue and accounted for 36% of total revenue in 2019 (UEFA, 2021). English clubs generated €5.9bn in broadcast revenue of the €8.3bn generated in European football in 2019, compared to €1.9bn by French clubs (UEFA, 2021) illustrating the gulf between the leagues.

Other studies (Dimitropoulos & Scafarto, 2021; Francois et al., 2022; Ghio, Ruberti, & Verona, 2019; Nicolliello & Zampatti, 2016; Özyaydin, 2020) focused on FFP's impact on individual leagues and how the regulation affects the underlying decisions that influence financial performance. For example, profit from selling players (Dimitropoulos & Scafarto, 2021; Nicolliello & Zampatti, 2016), change in the demography of players signed and reduced player transfer expenditure (Özyaydin, 2020) are some of the behavioural changes that clubs in Italy and Russia adopted in adhering to FFP.

This paper focuses on the impact of FFP in the English Premier League (EPL) exclusively because the league's losses, player wages, revenue and debt (Caglio et al., 2019; Francois et al., 2022) are the highest in European football, and the league is the most in-demand globally (KPMG Football Benchmark, 2019). For example, EPL clubs were the most significant contributors to the 7% average revenue growth of European football between 2005 and 2011 (UEFA, 2010, 2011). Also, as of 2019, the EPL's €5.9bn broadcast revenue was €2.41bn higher than the German league in second place in Europe (UEFA, 2021). Nevertheless, the EPL players' wages, combined losses, and debt are the highest in European football.

Thus, the EPL is a vital research sample to evaluate the effectiveness of FFP in improving financial performance. Francois et al. (2022) study focused on the EPL and the French league between 2008 and 2018, and noted national regulatory differences as a limitation of their study. Francois et al. (2022) highlighted, for further research, the possible impact of factors that they didn't include in their study such as broadcast rights, impacting profitability in the EPL. This study contributes to the literature by focusing exclusively on the impact of FFP on EPL clubs that have homogenous national regulations. Also, we include financial performance determinants from the literature which are specific to the EPL, such as broadcast rights highlighted by Francois et al. (2022) study.

In 2020, due to the financial impact of COVID-19, UEFA announced temporary changes to the FFP regulation by postponing the 2020 monitoring period and halving clubs' BER results (UEFA, 2020). Furthermore, in April 2022, UEFA announced wholesale changes that introduced the Financial Sustainability Regulation which effectively replaces the FFP. Thus, the FFP's life cycle was between 2011 and 2019. Thus, the second contribution of this paper is that it extends the empirical evidence on the impact of FFP by covering the entire period of the FFP regulation. This is essential because evidence from the literature suggests that the impact of FFP could be period-studied specific. For example, Birkhäuser et al. (2017) studied competitive balance in the top five European leagues between 2005 and 2015 and found evidence of declining competitive balance. In contrast, Plumley et al. (2019) found evidence of declining competitive balance in only two of the five leagues in their study covering 2006 to 2017.

Third, this paper exploits the difference-in-differences (DiD) methodology – which requires a treated (target clubs) and control group – because FFP applies exclusively to clubs participating in UEFA's competitions. We evaluate whether there is a real effect (Kanodia & Sapra, 2016) – a behavioural change occasioned by the requirement to report a measure – of FFP on EPL clubs' financial performance. The use of the DiD and the real effect hypothesis is growing in policy evaluation and impact assessment.

The rest of the paper is organised as follows. Section 2.2 summarises the existing literature, and we develop our hypotheses. In section 2.3, we

describe the data and the methodology adopted. Section 2.4 details the findings from our analysis. Finally, section 2.5 discusses our findings and concludes the paper.

2. Theoretical framework and hypothesis development

Kanodia (1980) popularised the term real effect in the finance and accounting literature, capturing the expected behavioural change due to the measurement and disclosure of an accounting measure. The intuition of real effect is that the presentation – an additional measure or change in methodology – of accounting and financial information that underlines a firm's economic transactions influences the decisions that culminate in the disclosed measure (Kanodia, 2006). Recent studies have tested the real effect hypothesis in the context of regulatory disclosure requirements. For example, Napier and Stadler (2020) found that the introduction of the International Financial Reporting Standard (IFRS) 15 for the disclosure of revenue from contracts with customers by the IFRS Board had little impact on the actual decisions of the STOXX 50 – the top blue-chip index in Europe. In contrast, Williams and Williams (2021) found evidence for decreased innovation investment in their study of the Financial Interpretation 48, which changed the reporting requirement of tax incentives for innovation. Williams and Williams (2021) found that managers considered immediate earnings and cash in their decision-making. They had expected that the decision-makers would forego the short-term negative impact of the reporting requirement for the long-term benefit of innovation.

The FFP regulation requires clubs competing in UEFA's competitions to submit separate reports from the annual statutory financial statements they prepare. This is because statutory reporting does not require companies to report measures such as BER. By requiring clubs to submit their BER calculation, UEFA expects clubs' behaviour and decision-making to align with the objective of FFP or face sanctions for breaching the regulation. Before UEFA's announcement of FFP, the primary objective of clubs was to commit funds they earned and, in some cases, additional funds borrowed from owners and banks towards player-related expenditure (wages and transfer fees), with little to no consideration for financial sustainability (Garcia-del-Barrio & Szymanski, 2009; Leach & Szymanski, 2015; Müller et al., 2012). Thus, the real decision UEFA expects by imposing a €5 m loss threshold is for clubs to balance their desire for on-field success within strict financial guidelines to reduce losses and by extension, indebtedness. Thus, this paper presents two hypotheses based on the real effect. UEFA expects the FFP through the BER to improve the profitability of clubs, and as such, it is an empirical requirement that can be measured. As such, the first hypothesis is:

H₁. Measured by the BER, the profitability of EPL clubs exposed to FFP has not improved post-FFP.

Second, we assume that if clubs can live within their means by limiting their losses to the €5 m threshold, they would have more cash to settle their debts. By extension, we expect that if profitability increases, indebtedness should reduce. Also, the BER restricts financial doping – where wealthy benefactors (usually club owners) or banks provide cash or lines of credit to a club to fund player investment – which is the primary cause of high debt in European football (Franck & Lang, 2014; Schubert & Könecke, 2015). Thus, our second hypothesis is:

H₂. Measured by cash flow from operations to debt, the indebtedness of EPL clubs exposed to FFP has not improved post-FFP.

3. Data and methodology

3.1. Data

To test the real effects of FFP, we collected the financial statements for 37 English football clubs based on their participation in the EPL

between 2005 and 2019. Our club selection criteria is participation in the EPL – specifically, we only included clubs that have participated in the EPL at least twice in the sample period. We do this to include clubs that are regularly in the EPL and may be affected by FFP. We only excluded Blackpool football club from our sample based on our criteria because the club was in the EPL only once in the sample period. We hand-collected financial data from the clubs' financial statements and notes to accounts obtained from their official website or annual filing with the Companies House.

We proxy the BER based on UEFA's specifications in Article 58 and Annex X of the FFP regulation which defines the concept of relevant income and relevant expenses – the difference between relevant income and expenses is the BER result (UEFA, 2018). A positive BER indicates a club is profitable while a negative BER indicates it is loss-making. Annex X contains BER adjustments that are not disclosed in the clubs' annual reports; therefore, it is difficult to mirror the BER perfectly. However, Caglio et al. (2019) obtained proprietary BER information from UEFA and noted that the actual BER is similar to a financial statements-based proxy of the BER. We adopt cash flow from operations to debt (CFTD) rather than debt to cash flow to measure indebtedness because English football clubs are highly leveraged, and in some instances, they report negative operating cash flow. We have used CFTD because the negative cash flow gives a holistic picture of the situation and is essential for our analysis. The higher the CFTD, the higher a football club's ability to meet its financial obligations. Table 1 below is the descriptive statistics for our dataset.

The average relevant income of the clubs in our dataset grew by 91% to £129.2 m post-FFP from £67.8 m pre-FFP. The average annual growth in relevant income in the entire period was 11%, with the pre and post-FFP growth contributing equally to the total growth. The most significant contributor to the post-FFP increase in relevant income was broadcast revenue which increased by 112% post-FFP to £64.3 m and accounted for 50% of relevant income (45% pre-FFP). The size and increase of broadcast revenue align with our expectations because it is the most significant contributor to European football's revenue. In 2019, the EPL contributed 71% to European football's broadcast revenue (UEFA, 2021). The Premier League sells broadcast rights (called television rights or TV rights) to global satellite operators in a three-year cycle, and the value of the rights has consistently increased since the formation of the EPL in 1992. Hence, every three years, broadcast revenue shows a sharp increase. Table 2 shows the EPL's TV rights cycles and their values from the league's inception in 1992.

The average relevant expenses grew by 75% post-FFP to £131.1 m from £75.1 m pre-FFP. Wages increased by 88% to £74.3 m post-FFP from £39.6 m and accounted for 58% of relevant expenses pre and post-FFP, confirming previous studies (Caglio et al., 2019; Dimitropoulos & Scafarto, 2021) findings that wages are the most significant

Table 1
Descriptive statistics for EPL clubs 2005–2019.

Variables	Full sample					Pre-FFP				Post-FFP					Diff
	Mean	SD	Max	Min	Obs	Mean	SD	Max	Min	Mean	SD	Max	Min		
Commercial	24.4	43.4	276.1	0.4	474	16.0	19.1	103.4	1.1	30.1	53.3	276.1	0.4	14.1**	
Matchday	20.7	26.8	154.3	1.8	474	20.1	23.6	108.8	2.0	21.0	28.8	154.3	1.8	0.9	
Broadcast	50.5	50.1	260.8	0.02	474	30.2	24.6	119.4	0.02	64.3	57.7	260.8	1.15	34.1**	
Relevant income	101.9	117.3	655.1	4.5	522	67.8	70.7	418.0	4.5	129.2	138.3	655.1	5.3	61.3**	
Wages	58.9	58.1	332.4	3.6	522	39.6	36.5	189.5	3.6	74.3	67.0	332.4	4.2	34.7**	
Transfer fees amortisation	19.1	24.5	170	0.02	522	11.9	14.6	83.9	0.02	24.8	28.9	170.0	0.11	12.99**	
Player sales profit(loss)	10.3	16.6	123.9	-12.7	522	6.4	9.7	80.7	-11.8	13.4	19.9	123.9	-12.7	6.9**	
Relevant expenses	106.3	111.5	636.9	7.1	522	75.1	76.4	350.6	7.1	131.1	127.7	636.9	7.1	56.0**	
BER	-4.4	28.9	141.6	-191.5	522	-7.0	22.9	67.4	-137.1	-2.0	31.1	141.6	-137.0	5.0**	
Net transfer fees	-15.6	33.5	45.3	-249.7	522	-8.7	22.2	45.3	-140.7	-21.1	39.5	40.6	-249.7	-12.4**	
Debt	152.6	223.7	1726.0	3.7	522	120.5	175.0	1005.9	4.3	178.3	253.5	1726.0	3.7	57.8**	
Cash flow	11.2	38.4	245.0	-82.6	432	5.8	25.6	176.6	-81.4	15.8	46.1	245.0	-82.6	10.0**	
CFTD	1.8%	25.4%	182.5%	-200%	432	0.6%	18.1%	72.4%	-45.3%	2.8%	30.2%	182.5%	-200%	2%	

Notes: All figures are in millions except for CFTD and Wages to Revenue. The variables Relevant Income and Expenses, Transfers profit(loss), BER CFTD and Wages to Revenue are variables we use to assess the impact of FFP. ** designates statistical significance at 5%.

Table 2
EPL broadcast rights deals.

Period	Broadcast deal length	Total TV deal value
1992–1997	Five years	£232 m
1997–2001	Four years	£768 m
2001–2004	Three years	£1.37bn
2004–2007	Three years	£1.35bn
2007–2010	Three years	£2.36bn
2010–2013	Three years	£3.22bn
2013–2016	Three years	£5.25bn
2016–2019	Three years	£8.14bn
2019–2022	Three years	£9.2bn

Notes: Table 2 shows the EPL broadcast deal rights sold by The Premier League to domestic and international broadcasters between 1992 and 2022. We adapted the information from the Sports Business Institute's website (Sports Business Institute, 2019).

component of relevant expenses. Transfer fees amortisation – the annual spread of cumulative transfer fees paid for acquiring players – increased by 108% to £24.8 m post-FFP, indicating increased transfer spending. While they spent more on transfers, the clubs earned more from selling players, with profit from player sales growing by 109% to £13.4 m post-FFP from £6.4 m pre-FFP. The changes in relevant income and expenses resulted in the average BER reducing by 71% to negative £2 m post-FFP from negative £7 m pre-FFP.

The gap between what the clubs spent on transfer fees increased as net transfer fees increased by 142% to £21.1 m post-FFP from £8.7 m. The average debt and cash flow increased by 48% and 172% to £178.3 m and £15.8 m post-FFP, respectively, resulting in CFTD increasing from 0.6% to 2.8% post-FFP. The improvement in CFTD and increase in matchday revenue are the only two variables in our dataset whose post-FFP difference is statistically insignificant.

3.2. Research design

We use the DiD approach to estimate the real effects of FFP on the financial performance of EPL clubs. The DiD requires a treated (target) and control group to estimate the treatment or intervention effect (Saunders, Lewis, & Thornhill, 2015). As mentioned, adherence to FFP is only mandatory for clubs that qualify for any of UEFA's club competitions. Thus, our criteria for including a club in the treated group is the qualification for UEFA competitions. The desire to qualify for UEFA competitions does not translate to being treated because there are, at most, seven qualifying spots annually in the EPL and sanctions for non-adherence to FFP are only applicable to clubs participating in UEFA competitions. As a baseline, we define as target, clubs that have participated in UEFA competitions in at least 10 out of 15 seasons over

our sample period (see Table 3 below).

The target clubs in Table 3 above are referred to as the Top Six because they consistently rank in the first six positions of the EPL table and qualify for UEFA's competitions. A limitation of the DiD approach is that the groups must be comparable and not inherently dissimilar. While the target clubs regularly qualify for UEFA competitions and receive more revenue than the control clubs might indicate a difference, DiD focuses on trends, not magnitude. Further in this section, we show that both groups are comparable because their revenue follows a similar trend.

To analyse whether the financial performance of EPL clubs exposed to FFP improved, we compare, using the regression models below, the average BER, and CFTD, pre and post-FFP.

$$Y_{it} = \beta_0 + \beta_1 Target_i + \beta_2 Post_i + \beta_{DiD} Target_i * Post_i + Controls + \epsilon_{it} \quad (1)$$

$$Y_{it} = \beta_0 + \beta_{DiD} Target_i * Post_i + Controls + FE + \epsilon_{it} \quad (2)$$

For all instances where we use the models, Y_{it} is the outcome variable, *Target* and *Post* are dummy variables, while *Target * Post* is the interaction term between *Target* and *Post*. In model 1, The *Target* variable takes 1 for clubs in the target group and 0 for the control group. The *Post* variable takes 1 for all the post-FFP years (2012 to 2019) and 0 for pre-FFP years (2005 to 2011). The coefficient β_{DiD} is the DiD causal and real effects estimate of FFP and is our coefficient of interest. β_{DiD} represents the mean difference in the outcome variable between the target and control groups, pre-FFP and post-FFP.

For model two, FE stands for club and year fixed effects and to avoid multicollinearity, we do not include the *Target* variable. The fixed effects capture variations due to the passage of time and club-specific idiosyncrasies, thereby reducing the possibility of an artificial identification of the FFP's real effect (Williams & Williams, 2021). We expect the R-square (R^2) to be higher in model 2 because of the annual growth and changes in variables such as revenue and wages. Model 2 results will be presented in brackets.

The variable *controls* in both models are a list of variables we expect to impact the outcome variable Y_{it} . We include the following control variables in the models: Promotion and relegation, position, UCL and UEL, quarter-final, foreign ownership, attendance, TV deal, and debt to assets. Promotion and relegation are dummy variables for when a club achieves promotion to or is relegated from the EPL. The evidence in the literature (Dimitropoulos & Scafarto, 2021; Leach & Szymanski, 2015; Plumley, Serbera, & Wilson, 2021) suggests that promotion and relegation are vital determinants of a club's profitability, with the former increasing profitability and the latter reducing profitability. However, parachute payments – intended to reduce the impact of the loss of revenue – to clubs relegated from the EPL soften the adverse impact of relegation on profitability (Plumley, Ramchandani, & Wilson, 2018;

Table 3
Target and control group.

Target clubs	Control clubs		
Arsenal	Everton	Portsmouth	Burnley
Chelsea	Aston Villa	Stoke City	Charlton
Manchester United	Bolton	Wigan	Crystal Palace
Liverpool	Middlesbrough	Wolves	Fulham
Tottenham	Newcastle	Hull	Norwich
Manchester City	Southampton	Swansea	Sheffield United
	West Ham	Birmingham	Sunderland
	Blackburn	Bournemouth	Watford
	Leicester City	Brighton	West Brom
	Reading	Queens Park Rangers	Cardiff City
	Huddersfield Town		

Notes: The baseline target clubs in Table 3 are also referred to as the “top-6” in the EPL. The top-6 tag is because these clubs have consistently ranked in the top 6 positions in the league (qualification for UEFA competitions).

Wilson, Plumley, Mondal, & Parnell, 2022). Nevertheless, we expect a positive and negative coefficient for promotion and relegation, respectively, with the latter less significant.

TV Deal is a dummy variable for the years when the Premier League agrees to a new broadcast deal with its global satellite television operators. Given that the broadcast deals have consistently increased in value, we expect the coefficient on the TV deal variable to be positive (Francois et al., 2022). The position variable is the final league position of a club in the EPL table and is set to zero for clubs outside the EPL in a season. As a lower number in position indicates better performance during the season, more revenue, and the theoretical likelihood of higher profit, we expect the coefficient to be negative (Ahtiainen & Jarva, 2020; Gallagher & Quinn, 2020).

UCL and UEL are dummy variables taking 1 for when a club qualifies for either of UEFA's club competitions and 0 if otherwise. We expect clubs playing in the UCL to be more profitable because the financial reward from the competition is more than that of the UEL or not qualifying for either competition (Dimitropoulos & Scafarto, 2021). Nevertheless, we expect UCL and UEL to be positive. Quarter-final is a dummy variable for a club's progress in UEFA competitions. The further a club goes in the competitions, the higher the financial reward; thus, we expect the quarter-final coefficient to be positive (Ahtiainen & Jarva, 2020). Attendance is a stadium capacity utilisation variable that we expect to be positive because higher attendance translates to higher matchday revenue. Foreign ownership is a dummy variable that takes the value of 1 for clubs owned by non-British nationals and 0 if otherwise. We expect the coefficient to be negative because foreign-owned clubs spend more on players' expenditures and are typically more loss-making than non-foreign-owned clubs (Rohde & Breuer, 2016, 2018; Wilson, Plumley, & Ramchandani, 2013). Finally, debt to assets is a club size control variable.

An important assumption for the DiD estimation is the parallel trend assumption which requires uniformity of pre-treatment trends in both groups to estimate the counterfactual (Rambachan & Roth, 2019). It is worth noting that it is impossible to know if the groups would have followed the pre-treatment trends in the post-treatment period. However, we gain comfort over the counterfactual by assessing the pre-treatment trend. Visual inspection of pre-treatment data for the absence of severe trend deviation and placebo tests give comfort over the estimation. Figs. 1 to 4 below show the relevant income and expense, BER and CFTD trends for the target and control groups.

Figs. 1 and 2 show that both groups' relevant income and expenses trended upwards in the pre and post-FFP periods. Relevant income did not fall in any year for the control group, but there was a fall in 2019 for the target group's relevant income. For the target group, there was a slight dip in relevant expenses in 2012, with the upward trend continuing from 2013 onwards. Though the magnitude differs, the similarity of pre and post-FFP income and expense trends of both groups illustrates that they fit into the DiD expectation for comparability. In addition, the fact that these trends followed a similar pattern post-FFP would strengthen our outcome variable impact identification.

In Fig. 3, both groups' BER were negative and had a downward trajectory. While visual inspection reveals that the BER for the target group grew in 2007 and 2008, the average trajectory was downward between 2005 and 2011. Post-FFP, the target group's BER trended upwards and was positive from 2014 onwards, while the control group's BER was positive in only 2017 with no observable trend.

In Fig. 4, the CFTD for the target and control groups follow a similar downward trend to the BER. However, the CFTD for the control group was negative pre-FFP, while the target group was positive. Post-FFP, the target group's CFTD was negative in 2012 but trended upward afterwards. The control group's CFTD oscillated between positive and negative post-FFP with no recognisable trend.

In addition to visual inspection, we ran placebo tests on the pre-FFP data for both groups to support the parallel trend assumption in Section 4.3.

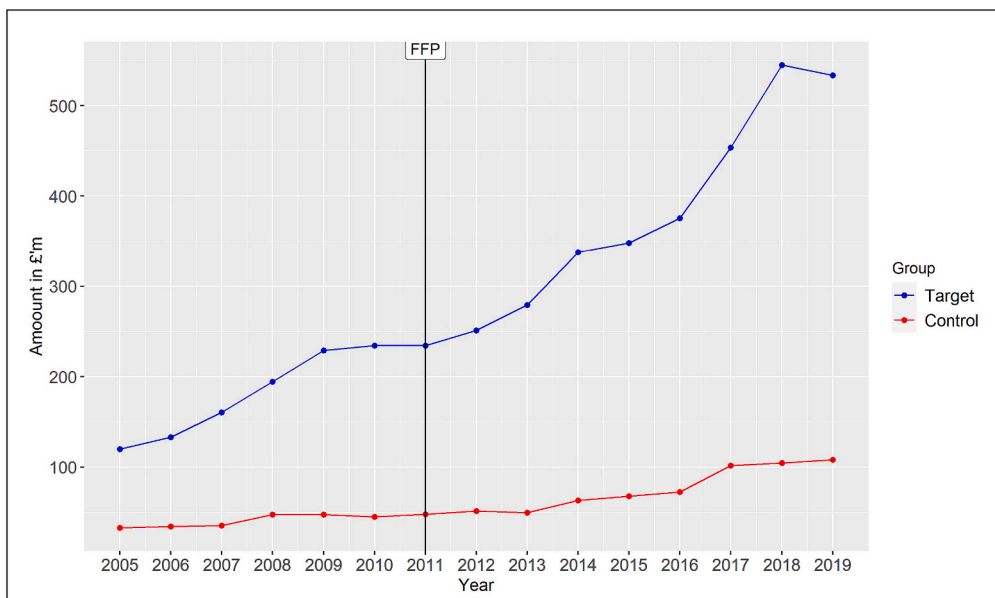


Fig. 1. Target and control groups' average relevant income.
Notes: The author created this figure from the information in the dataset.

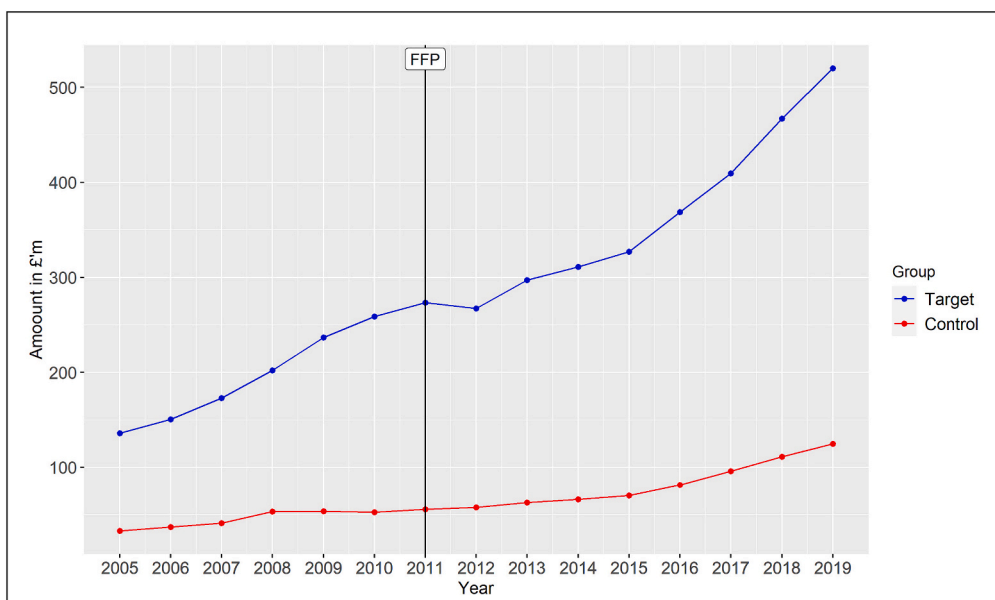


Fig. 2. Target and control groups' average relevant expenses.
Notes: The author created this figure from the information in the dataset.

4. Results

4.1. Profitability

Based on the definition of target football clubs – participants in at least 10 out of 15 European football club competitions – Table 4 details the results of the baseline DiD regressions. The outcome variables in Table 4 are BER, relevant income and expenses and player sales profit. The coefficients of interest and causal effect estimate, β_{DiD} , are positive and statistically significant in all our baseline regressions. The BER for the target group increased by £37.46 m (£36.73 m) more than it increased for the control group after the introduction of FFP. In columns 3 to 6 in Table 4, we see that the post-FFP BER improvement was because the relevant income for the target group increased at a higher

rate than their relevant expenses, the opposite of pre-FFP trends. For example, from our dataset we see that in 2010, target clubs' relevant income grew by 6%, while relevant expenses increased by 39%; in contrast, relevant income grew by 21%, while relevant expenses increased by 11% in 2017. The R^2 for relevant income and expenses for both models are high because of the annual growth in the variables.

In columns 7 and 8 of Table 4 the β_{DiD} for player sales profit was positive and statistically significant, illustrating that target clubs negotiated better deals when they sold players post-FFP. This behavioural change is consistent with findings from Dimitropoulos and Scafarto (2021) and Nicolliello and Zampatti (2016) studies that found that Italian clubs sold players for higher profit (compared to pre-FFP) to adhere to FFP.

We investigate the impact of FFP on BER further by controlling for

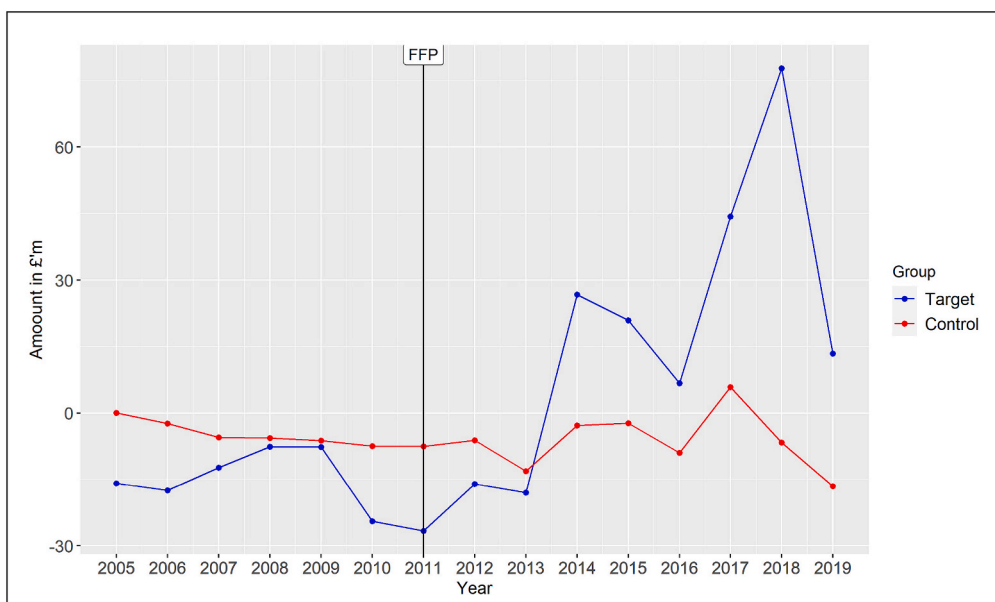


Fig. 3. Target and control groups' average BER.
Notes: The author created this figure from the information in the dataset.

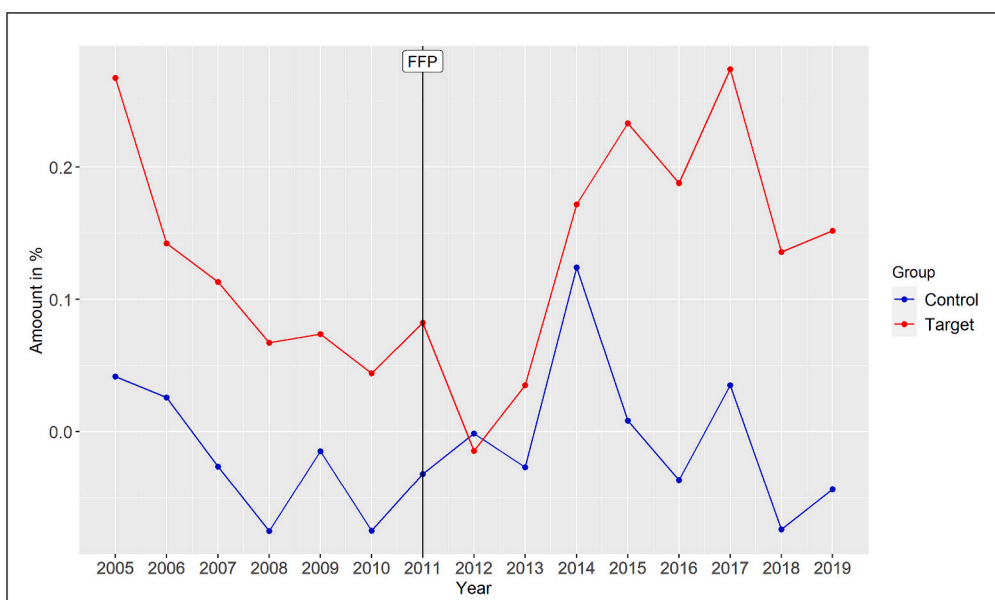


Fig. 4. Target and control groups' average CFTD.
Notes: The author created this figure from the information in the dataset.

variables that are likely to impact the clubs' profitability. Table 5 summarises the results of including control variables in the BER regressions.

From Table 5, we find that the inclusion of control variables does not reduce the size or significance of the β_{DID} coefficient. From the evidence in columns 3 to 6 in Table 4 – a higher rate of increase in relevant income compared to relevant expenses led to improved BER – we had expected that profitability would increase in the years when the TV deal increased because broadcast revenue is the largest club revenue source. However, the TV deal coefficient was negative in all columns in Table 5, signifying that clubs were less profitable when they received more revenue from broadcast deals. For example, Table 6 presents Liverpool football club's financial information and shows that wages and net transfer fees increased whenever the TV deal increased; consequently, BER was less in those years. In 2016 when the TV deal increased, Liverpool's BER

(–£16 m) was worse than the two preceding (£63 m and £4 m) and subsequent years (£47 m and £134 m).

The coefficient for promotion is positive and significant in all columns of Table 5, indicating that clubs' profitability improves when they are promoted, confirming evidence from other studies in the literature (Dimitropoulos & Scafarto, 2021; Plumley et al., 2021; Ruta, Lorenzon, & Sironi, 2019). For the relegation variable, the coefficient is negative in all columns in Table 5 – relegated clubs are more likely to report losses (Dimitropoulos & Scafarto, 2021; Leach & Szymanski, 2015; Plumley et al., 2021; Ruta et al., 2019) – but is only significant in column 4. A possible explanation for the weak evidence for relegation as a significant determinant of profitability is the parachute payments that relegated clubs receive from the Premier League as a buffer to cushion the impact of the loss of revenue (Plumley et al., 2021; Wilson et al., 2022; Wilson,

Table 4
BER, relevant income and expenses and player sales profit regressions.

	BER		Relevant Income		Relevant Expenses		Player sales profit	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Post (β_1)	-1.23 (2.08)	-	35.75*** (7.44)	-	36.99*** (6.80)	-	5.07*** (1.23)	-
Target (β_2)	-11.03 (15.27)	-	145.00*** (25.81)	-	157.80*** (24.35)	-	10.91*** (2.24)	-
Post * Target (β_{DID})	36.73*** (8.10)	37.46*** (8.25)	168.17*** (26.50)	167.87*** (26.93)	129.67*** (22.51)	128.61*** (22.85)	12.49* (6.70)	12.41* (6.78)
(Intercept)	-4.98*** (1.08)	-	41.60*** (4.43)	-	46.58*** (4.98)	-	4.42*** (0.612)	-
Time fixed effect	-	✓	-	✓	-	✓	-	✓
Firm fixed effect	-	✓	-	✓	-	✓	-	✓
Observations	522	522	522	522	522	522	522	522
R ²	0.083	0.412	0.717	0.857	0.706	0.878	0.226	0.435
Within R ²	-	0.098	-	0.336	-	0.277	-	0.034

Notes: Robust standard errors are clustered at club level. 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 5
BER regression with control variables.

BER	(1)	(2)	(3)	(4)	(5)	(6)
Post (β_1)	-1.00 (2.13)	-0.96 (2.18)	3.88** (1.91)	-	-	-
Target (β_2)	-11.24 (15.34)	-21.76 (13.97)	-18.52 (12.43)	-	-	-
Target * Post (β_{DID})	37.32*** (8.33)	39.73*** (7.48)	37.19*** (6.72)	37.75*** (8.35)	41.20*** (7.39)	39.00** (6.62)
TV Deal	-8.94*** (2.54)	-9.35*** (2.46)	-9.29*** (2.35)	-7.49** (3.56)	-7.52** (3.52)	-6.90* (3.55)
Promotion	13.49*** (2.84)	12.17*** (2.98)	13.17*** (2.78)	12.53*** (2.03)	9.90*** (2.34)	10.93*** (2.41)
Relegation	-4.40 (3.12)	-3.64 (3.39)	-4.93 (3.75)	-5.13* (2.94)	-3.18 (3.31)	-3.28 (3.38)
Position	-	0.124 (0.160)	-0.053 (0.207)	-	0.278 (0.222)	0.372 (0.288)
UCL	-	8.08 (15.11)	9.43 (13.41)	-	23.22** (10.74)	21.11** (8.11)
UEL	-	-3.70 (7.26)	-4.09 (6.73)	-	-5.30 (6.73)	-4.60 (6.27)
Quarter Final	-	10.99 (9.84)	14.54 (9.03)	-	15.74** (6.60)	16.72*** (5.83)
Foreign Ownership	-	-	-16.92*** (4.33)	-	-	-14.22*** (4.16)
Attendance	-	-	4.00 (9.08)	-	-	-10.82 (14.36)
Debt to Assets	-2.30 (1.64)	-2.31 (1.73)	-2.65* (1.55)	-1.67 (1.05)	-1.48 (1.06)	-1.36 (1.03)
(Intercept)	-0.150 (2.85)	-0.666 (3.27)	0.658 (7.81)	-	-	-
Time fixed effect	-	-	-	✓	✓	✓
Club fixed effect	-	-	-	✓	✓	✓
Observations	522	522	521	522	522	521
R ²	0.142	0.157	0.223	0.437	0.488	0.495
Within R ²	-	-	-	0.136	0.213	0.238

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

Ramchandani, & Plumley, 2018).

The coefficient for the position variable is positive in all columns except for column 3 in Table 5, indicating that a higher league performance did not improve profitability, though none of the coefficients was significant. A possible explanation is that clubs invest more in the following year to maintain their past success. The UCL coefficient is positive in all columns but only significant in columns 5 and 6 in Table 5, illustrating that participating in the UCL improves clubs' profitability. In contrast, participating in the UEL deteriorates clubs' profitability, though the coefficient is insignificant. The difference in profitability is not surprising, given the chasm in financial rewards between UCL and

UEL. Also, it is plausible that clubs competing in the UEL aimed but failed to qualify for the UCL; This means that their budgets (player wages and transfer fees) reflected their ambition, but they missed out on the additional revenue by failing to qualify for the UCL. Progress in UEFA competitions comes with significant additional revenue; therefore, the positive (in all columns) and significant coefficient (columns 5 and 6) for the quarter-final coefficient aligns with our expectations.

The foreign ownership variable was negative and significant in all the columns in Table 5, illustrating that non-British-owned clubs make more losses than clubs with British owners. This finding is in line with evidence (Jones & Cook, 2015; Rohde & Breuer, 2018; Wilson et al.,

Table 6
Liverpool football club's financial performance 2005–2019.

Year	TV deal increase?	BER	Net transfer fees (paid) received	Wages % increase/ (decrease)
2005	No	13	-36	-
2006	No	-2	-30	7%
2007	Yes	-19	-48	13%
2008	No	12	-40	16%
2009	No	-14	-13	12%
2010	Yes	-18	6	21%
2011	No	-46	-57	11%
2012	No	-38	-15	-12%
2013	Yes	-47	-82	11%
2014	No	4	-34	9%
2015	No	63	-60	16%
2016	Yes	-16	-60	25%
2017	No	47	-4	0%
2018	No	134	-58	27%
2019	Yes	51	-164	18%

Notes: The BER for Liverpool football club decreased in most of the years when the TV increased. We also see that wages and transfer fees spent on player acquisitions increased. This illustrates a behavioural pattern linked to increased broadcast revenue. All numbers are in millions of £ except for wages and salaries % change.

2013) in the literature and confirms that some foreign owners seem to lean more towards win-maximisation. In the period we studied, there were 209 data points when clubs' had foreign owners, resulting in a combined £2.1bn negative BER. A look at the data indicates outliers on both ends of the profitability spectrum. For example, Chelsea owned by Roman Abramovich in 15 years during the studied period (7% of the population) had a cumulative negative BER of £682 m, accounting for 32% of combined foreign-owned clubs' negative BER. Chelsea's cumulative negative BER was the lowest in our dataset. In contrast, Manchester United under the Glazers ownership had a cumulative positive BER of £165 m, the third best our dataset. Finally, the attendance coefficient is not significant, but it is positive in column 3 and negative in column 6. Nevertheless, From Tables 4 and 5, where the coefficient of interest β_{DID} (Target * Post) for the BER was positive and significant, we find evidence illustrating that target clubs' profitability has improved post-FFP; thus, we reject the null hypothesis H_1 .

4.2. Indebtedness

The β_{DID} coefficients in columns 1 and 2 of Table 7 indicate that CFTD improved by 1.6% (2.6%) for target clubs compared to control clubs post-FFP, but the marginal improvement is not statistically significant. The absence of statistical significance suggests that FFP has not improved target clubs' ability to repay the debt they owe, confirming the

Table 7
CFTD, cashflow and total debt regressions.

	CFTD		Cash flow		Debt	
	(1)	(2)	(3)	(4)	(5)	(6)
Post (β_1)	0.021 (0.037)	-	2.65 (2.53)	-	34.63*** (10.25)	-
Target (β_2)	0.133** (0.052)	-	29.34* (15.46)	-	329.02*** (96.70)	-
Target * Post (β_{DID})	0.016 (0.058)	0.026 (0.056)	39.69*** (10.21)	38.91*** (9.88)	170.78** (73.90)	167.06** (74.60)
(Intercept)	-0.022 (0.019)	-	-0.428 (0.792)	-	60.95*** (8.52)	-
Time fixed effect	-	✓	-	✓	-	✓
Club fixed effect	-	✓	-	✓	-	✓
Observations	432	432	433	433	522	522
R ²	0.052	0.312	0.339	0.612	0.543	0.868
Within R ²	-	0.001	-	0.095	-	0.130

Notes: Robust standard errors are clustered at club level. All numbers in the table are in millions of £, except for column 1 and 2, which is expressed in percentage. Significance levels denoted as *p < 0.1, **p < 0.05, and ***p < 0.01.

findings of Caglio et al. (2019) and Plumley et al., 2021 studies. The β_{DID} coefficient for cash flow and debt in columns 3 to 6 of Table 7 reveals that both components of CFTD increased significantly for target clubs post-FFP. However, the increase in cash flow was not sufficient to have a significant impact on the target clubs' CFTD.

Table 8 presents the result of the CFTD regressions with the inclusion of control variables. The β_{DID} coefficients in all the columns of Table 8 were positive but insignificant, similar to Table 7. The TV deal coefficients were negative in all columns but only significant in the regressions without fixed effects. Similar to the BER result, when broadcast revenue increased, clubs overspent on player-related expenditures, worsening their ability to repay the debt owed. The coefficient for promotion was positive and significant in all the columns of Table 8, illustrating that clubs' ability to repay the debt owed improved significantly upon promotion to the EPL, confirming evidence in the literature (Dimitropoulos & Scafarto, 2021; Leach & Szymanski, 2015; Plumley et al., 2021).

As expected, relegation from the EPL worsens clubs' CFTD, given the loss of revenue. The relegation coefficient was negative in all the columns of Table 8 but was only significant in columns 1,3, 4 and 6. The coefficients' size and significance reveal that compared with the promotion, relegation does not have as much impact on CFTD, possibly because of the parachute payments that relegated clubs received from the Premier League. The position coefficient was positive in all the columns of Table 8 and was insignificant in only one column, column 6, which implies that a higher league position worsened a club's ability to repay its debt. Similar to the BER explanation, a higher league position could lead clubs to invest more to maintain past improvement.

The UCL and UEL coefficients were positive in all columns of Table 8, indicating that the ability to repay the debt owed was higher when clubs participated in UEFA competitions. However, progress to the quarter-final in UEFA competitions worsened CFTD, though the coefficient was insignificant. The coefficient for foreign ownership is negative and significant in all columns of Table 8. Foreign-owned clubs' CFTD was lower than British-owned clubs possibly because of financial doping, which rapidly increased the clubs' debt levels and operating cash flow due to significant financial losses reported. While FFP restricted financial doping in 2011, the existing debt owed to the owners is still on some clubs' balance sheets. For example, Chelsea's average debt in the period was £1.05bn, £707 m more than Tottenham who had the highest debt of non-foreign owned clubs. Finally, the attendance coefficient is positive and significant in Table 8, indicating that higher attendance improves CFTD.

From the results presented above, we do not find evidence to conclude that the introduction of FFP has reduced the indebtedness of target clubs in the EPL; hence, we do not reject the null hypothesis H_2 .

Table 8
CFTD regressions with control variables.

CFTD	(1)	(2)	(3)	(4)	(5)	(6)
Post (β_1)	0.026 (0.036)	0.019 (0.032)	0.065** (0.027)	–	–	–
Target (β_2)	0.153*** (0.052)	0.080 (0.082)	0.035 (0.061)	–	–	–
Target x Post (β_{DID})	0.014 (0.058)	0.016 (0.056)	0.005 (0.048)	0.021 (0.055)	0.019 (0.049)	0.001 (0.047)
TV Deal	–0.040* (0.058)	–0.051** (0.022)	–0.051** (0.022)	–0.034 (0.035)	–0.030 (0.036)	–0.031 (0.032)
Promotion	0.229*** (0.035)	0.129*** (0.041)	0.115*** (0.041)	0.215*** (0.041)	0.131*** (0.038)	0.116*** (0.038)
Relegation	–0.085** (0.035)	–0.026 (0.041)	–0.067* (0.038)	–0.102** (0.038)	–0.052 (0.038)	–0.083** (0.036)
Position	–	0.011*** (0.002)	0.004* (0.002)	–	0.001*** (0.002)	0.003 (0.002)
UCL	–	0.135** (0.063)	0.115** (0.045)	–	0.160*** (0.042)	0.134*** (0.035)
UEL	–	0.067** (0.029)	0.026 (0.025)	–	0.055** (0.026)	0.031 (0.021)
Quarter Final	–	–0.022 (0.028)	–0.006 (0.029)	–	–0.015 (0.029)	–0.006 (0.029)
Foreign Ownership	–	–	–0.130*** (0.032)	–	–	–0.141** (0.054)
Attendance	–	–	0.508*** (0.104)	–	–	0.491*** (0.132)
(Intercept)	–0.032 (0.020)	–0.094*** (0.021)	–0.420*** (0.080)	–	–	–
Time fixed effect	–	–	–	✓	✓	✓
Club fixed effect	–	–	–	✓	✓	✓
Observations	432	432	432	432	432	432
R ²	0.126	0.204	0.304	0.376	0.422	0.471
Within R ²	–	–	–	0.094	0.16	0.231

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

4.3. Robustness

For robustness, we altered the definition of target clubs and ran placebo tests. First, we adjusted our definition of target clubs to include clubs that narrowly missed out on qualifying for the UCL or UEL – seventh and eighth-placed teams in the EPL. We adopt another definition of target clubs to be the top-ten clubs by debt. As the additional clubs in the alternative definitions did not receive treatment, we expect their inclusion to have a downward impact on the β_{DID} coefficient. Table 9 presents the result of the alternative definition of the target clubs.

Table 9
Alternative definition BER regressions.

BER	Alternative 1		Alternative 2	
	(1)	(2)	(3)	(4)
Post (β_1)	–0.89 (2.14)	–	–2.77 (1.93)	–
Target (β_2)	–9.17 (9.35)	–	–10.35 (9.53)	–
Target * Post (β_{DID})	20.84** (8.57)	21.27** (8.84)	27.78*** (7.21)	28.62*** (7.43)
(Intercept)	–4.21*** (1.05)	–4.08*** (1.01)	–3.95*** (1.05)	–4.08*** (1.01)
Time fixed effect	–	✓	–	✓
Club fixed effect	–	✓	–	✓
Observations	522	522	522	522
R ²	0.037	0.378	0.064	0.401
Within R ²	–	0.045	–	0.080

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

The alternative definition β_{DID} coefficients for BER in columns 1 and 3 in Table 9 are reduced by £15.95 m and £8.95 m, respectively, compared to our baseline definition of target clubs in Table 4. We expected a reduction because the additional clubs did not receive FFP treatment because they did not qualify for the UCL or UEL. We conclude that the intention to qualify did not improve the additional clubs' profitability.

We run placebo tests as robustness checks. Placebo tests demonstrate that an effect does not exist where we do not expect it to. These tests help to support the parallel trend assumption and impact identification. First, we introduced a fake treatment year, 2007, to the pre-FFP data (2005–2011) for the first placebo test. The second and third placebo tests introduce fake target groups to the complete data, excluding the baseline target group. The fake target group in placebo two are clubs that qualified for UEFA competitions at least once. For placebo three, the fake treatment group is a random selection of clubs – we used Microsoft Excel's RANDBETWEEN function. The results of the placebo regressions are in Table 10 below.

We designed placebo 1 to support the parallel trends assumption. The β_{DID} coefficients in columns 1 and 2 above are not statistically significant, indicating that the trend between the target and control group was not significantly different pre-FFP. Placebos 2 & 3 are equally not statistically significant. By excluding the baseline target group and introducing a fake target group, the absence of significance in columns 3, 4, 5, and 6 supports the FFP impact identification in Table 4 and Table 5 for the BER and Table 7 and Table 8 for the CFTD.

4.4. Combined results discussion

The introduction of FFP improved the profitability of target clubs by encouraging them to spend within the relevant income threshold. In contrast to the pre-FFP trend, where expenditure grew faster than

Table 10
Placebo tests regressions.

BER	Placebo 1		Placebo 2		Placebo 3	
	(1)	(2)	(3)	(4)	(5)	(6)
Post (β_1)	-4.07** (1.77)	-	-2.96 (1.87)	-	-1.22 (3.15)	-
Target (β_2)	-12.61 (15.86)	-	-7.45*** (2.50)	-	-1.60 (2.15)	-
Target * Post (β_{DID})	2.71 (17.60)	3.23 (17.72)	6.91 (2.36)	7.37 (6.64)	0.22 (4.23)	-0.820 (4.53)
(Intercept)	-2.63*** (0.858)	-	-3.14*** (0.892)	-	-4.32*** (1.42)	-
Time fixed effect	-	✓	-	✓	-	✓
Club fixed effect	-	✓	-	✓	-	✓
Observations	232	232	432	432	432	432
R ²	0.041	0.569	0.013	0.263	0.003	0.257
Within R ²	-	0.002	-	0.008	-	0.001

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

revenue, the reverse occurred post-FFP, with the growth in relevant income exceeding relevant expenses. Thus, the real effect of FFP on profitability is that target clubs improved the management of their income and expenses ratio post-FFP. This is because in both the pre and post-FFP periods, European football income grew at a similar rate of 7%.

The improvement in profitability is yet to translate to EPL clubs' indebtedness. A possible explanation is that the earned profit is reinvested in acquiring players rather than settling existing debt. Player-related expenditure consistently trended upwards throughout the sample period, but pre-FFP, the excess of what revenue could fund for player acquisitions was covered through loans from banks and club owners (financial doping). However, FFP, through the BER, restricted financial doping and mandated clubs to spend within the limit of what they earn in relevant income. Thus, while FFP improved their profitability, clubs immediately allocated it to the next season's transfer budget.

In Fig. 5, we notice that pre-FFP, target clubs' debt increased as their net transfer fees paid for players increased (negative), while BER followed a close trend with net transfer fees paid. Post-FFP, as target clubs'

became profitable evidenced by BER rising above £0, their net spending on transfer fees increased, indicating an inverse relationship. This visual inspection seems to confirm our observation that the target clubs reinvested their profit in acquiring players because of FFP's restriction on financial doping. We believe this pattern provides evidence for the correlation between on-field success and investment in football players and the objective of football clubs. Thus, EPL clubs seem to retain the win-maximising objective, but FFP has added profitability as a requirement to achieve it.

Furthermore, we noted that following a relatively constant debt level between 2010 and 2016 – attributable to the BER restriction on financial doping – target clubs' debt grew consistently from 2016 to 2019. From inspection of the data, we see that trade creditor, primarily transfer fees payable to other clubs, was responsible for the sharp rise in debt, see Fig. 6. With restrictions on funding from owners and banks, clubs purchased players via instalment payments to manage their cash flow post-FFP, thereby increasing debt. The sharp increase in trade creditors from 2015 to 2019 in Fig. 6 mirrors the increase in debt in Fig. 5.

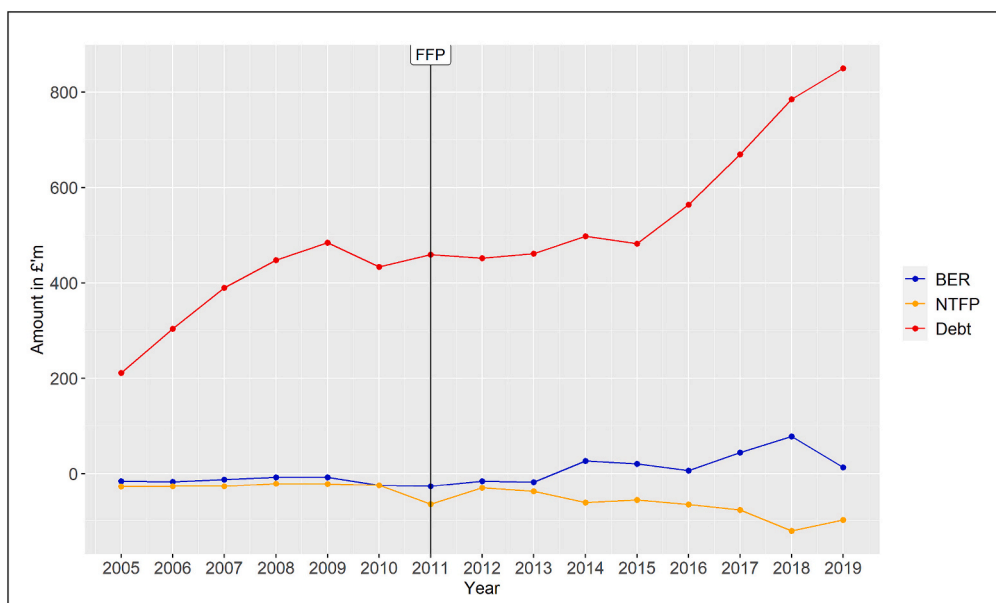


Fig. 5. Average BER, debt and net transfer fees paid for target clubs.

Notes: The author created this figure from the information in the dataset. The graph shows the target clubs' total debt, BER and net transfer fees paid (NTFP). Pre-FFP BER and net transfer fees paid (NTFP) were on similar trajectories. Post-FFP, while BER increased and became positive, net transfer fees increased in a similar trajectory.

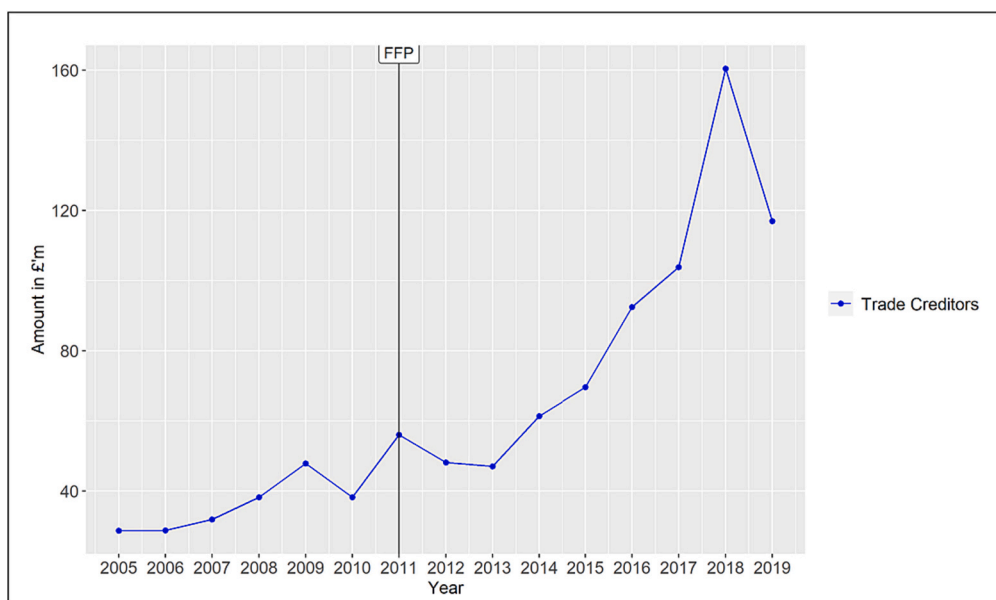


Fig. 6. Annual average trade creditors for target clubs.

Notes: The author created this figure from the information in the dataset. The graph shows the target clubs' total debt and cash flow. Post-FFP, short-term debt more than doubled, and its proportion of total debt significantly increased.

The risk with the growing trade creditors is that a club failing to meet its financial obligations or an industry-wide shock to future income or cash flow can cause contagion leading to the financial failure of clubs connected through instalment payments.

5. Conclusion

UEFA introduced FFP in 2011 in response to European football's ailing financial situation, where clubs spent more than they earned in revenue on player-related expenses, resulting in record losses and indebtedness. This paper examines FFP's impact on the financial performance of EPL clubs since its introduction in 2011. Precisely, we assess the real effects of FFP on the profitability and indebtedness of EPL clubs. By imposing a loss threshold of €5 m, requiring submission of break-even financial reports and sanctioning non-compliance, UEFA expects clubs to change the underlying decisions that resulted in the pre-FFP financial losses and indebtedness.

We proposed two hypotheses in this study to examine the impact of FFP 1) The profitability of EPL clubs exposed to FFP has not improved, and 2) The indebtedness of EPL clubs exposed to FFP has not improved. Drawing on financial information collected from the financial statements of 37 clubs between 2005 and 2019, we estimated the impact of FFP by adopting the difference-in-differences methodology. Our findings show that FFP positively impacted the profitability of the football clubs exposed (target clubs) to the regulation. The evidence suggests that the higher growth rate in relevant income – not a reduction in relevant expense or its growth rate – was responsible for the increase in profitability. Thus, the target clubs managed their income and expense ratio better post-FFP than pre-FFP. Also, we find that selling players for higher values post-FFP helped target clubs to adhere to FFP and improve their profitability.

Confirming evidence in the literature, we find that promotion is a strong determinant of profitability while relegation is a weak determinant. We find evidence suggesting that participating in the UCL improves clubs' profitability. Foreign-owned clubs make more losses than their British-owned counterparts possibly because they lean more towards win-maximisation. We find that the upward negotiation of the domestic TV deal is a significant but negative determinant of profitability. To our knowledge, this finding is novel, as the expectation is that

higher broadcast revenue will improve the likelihood of profitability.

In contrast to our findings on profitability, we do not find a similar significant impact of FFP on indebtedness though it marginally improved for target clubs compared to control clubs. We believe the win-maximisation objective of football clubs and the correlation between on-field success and investment in player acquisition encouraged clubs to prioritise reinvestment of profit in the playing squad above settling their debt, hence the absence of a significant reduction in indebtedness. Nevertheless, we find evidence that promotion to the EPL, participation in UEFA competitions and stadium attendance reduces indebtedness, while relegation and increased broadcast deals worsen indebtedness.

We conclude that in the EPL, FFP's primary objective – reducing losses and encouraging clubs to spend what they earn as income – has been achieved. Regarding indebtedness, the progress has been marginal, and we attribute this to the FFP not having a specific measure similar to the BER for profitability. An unintended consequence is that football clubs are now more interconnected through debt owed to each other due to instalment payments. While FFP requires clubs not to have overdue payables exceeding three months, it does not address the magnitude of the payables. The vulnerability here is that credit risk can materialise if a club cannot meet its short-term financial obligations or an industry-wide external shock to income, leading to several clubs' financial failure. The credit risk mirrors the 2008 financial sector crisis. As such, we believe a Basel III-styled capital requirement that has recorded success in the banking system will help build on the BER's progress. Therefore, we suggest a similar capital requirement set aside from annual revenue as a policy recommendation.

This paper contributes to the literature as, to our knowledge, the first stand-alone EPL analysis covering seven years before and the entire period of the FFP regulation – 2011 to 2019. The empirical findings of this paper are beneficial to the regulator, football clubs and the existing literature. Firstly, it evaluates the FFP regulatory framework and provides vital evidence of the success of the regulation regarding the profitability of EPL clubs. We also highlight the unintended behavioural change that has prevented FFP from achieving similar success in indebtedness, and we have proffered a policy recommendation. Secondly, our findings highlight the behaviour of football clubs in years when the value of the domestic TV deal increases. By being prudent in these years, we believe clubs will benefit in the long run.

Finally, we acknowledge the limitations of this study which can be the basis for further research. This paper does not investigate the full scale of the interconnection of football clubs. Some clubs agree to instalment payments for players' acquisition over periods extending to more than one year. This implies that a portion of the money owed to other clubs is reported in long-term debt. Potentially, this is an area for future studies to assess credit risk further. We acknowledge the possible limitation of the difference-in-difference methodology due to the magnitude of difference in the target and control groups; however, our results are robust to placebo tests and alternative group definitions. Furthermore, we carried out a visual inspection of trends between groups.

Data availability

The authors do not have permission to share data.

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