The impact of financial fair play on the financial performance of Spanish professional football: Do the biggest clubs behave better?

Jorge Martín-Magdalena*[1], Carlos Martínez-de-Ibarreta[1], José Antonio Gonzalo-Angulo[2], Aurora García Domonte[1]

[1]Universidad Pontificia Comillas, [2]Universidad de Alcalá de Henares

This is a preliminary version of the paper submitted for publication at ***Sport, Business and Management***. The final version should be consulted in the Journal:

https://doi.org/10.1108/SBM-09-2022-0087

Abstract

Purpose: This study aims to contribute to the analysis of the impact of financial control or "Financial Fair Play" regulations (FFP) on the financial performance of the Spanish professional football league (LaLiga) by examining the moderating role of club size. We argue that introducing FFP positively impacted the financial performance of small clubs but increased the economic gap between large and small clubs.

Design/methodology/approach: A twelve-year dataset covering twenty-two football clubs is used to test the hypotheses. Panel regression models are estimated for eight measures of financial performance indicators, comprising three financial dimensions: profitability, liquidity, and solvency. The Gini index is applied to clubs' economic and sports variables to determine the degree of economic imbalance between the largest and smallest clubs.

Findings: The results show that FFP significantly and positively impacted the profitability of small clubs and the solvency of medium-sized clubs but has not impacted the largest clubs' financial performance. After these regulations, economic inequality in Spanish LaLiga increased.

Originality: We find evidence that club size moderates the effect of FFP on financial performance. The moderating role of club size may explain the mixed results found in previous research. Our findings contribute to improving the literature on the impact of FFP on the financial performance of European football clubs.

Keywords: financial performance, financial fair play, football, Spanish football, big clubs**.**

Article classification: Research paper

Introduction

In recent decades, football has become an essential economic industry beyond its beginnings as a purely sporting industry (Leach and Szymanski, 2015; McFarland, 2007; Portet, 2011). This has caused the different economic-financial aspects of football's world to become increasingly important. One of the most relevant aspects in recent years is the introduction of financial control regulations or "Financial Fair Play" regulations (FFP) by the Union of European Football Association (UEFA) for European professional football.

European professional football sports and economic model differs from the American sports model. In Europe, the sporting achievements of professional football clubs prevail over financial performance, making the competitive European environment particularly aggressive (Leach and Szymanski, 2015). In contrast, elite U.S. professional teams seek to maximize their earnings, with a sports model adapted to this objective (Szymanski, 2017).

Due to this high level of competitiveness, historically, the expenses of European professional football clubs have exceeded their revenues (Szymanski, 2017). When maintained over time, this situation generated disequilibria in their balance sheets,

increasing the risk of financial insolvency (Alaminos *et al.*, 2020). Given the importance of most European clubs' financial situation, with continued losses financed through growing indebtedness and sometimes public subsidies, the UEFA launched FFP in 2011. The FFP aimed to improve clubs' financial situations, reduce solvency risk, and enhance the competitiveness of European football competitions (Alaminos *et al.*, 2020).

To date, several authors have investigated the impact of FFP on the risk of distress of clubs (Alaminos and Fernández, 2019; Barajas and Rodríguez, 2013; Szymanski, 2017), the competitive balance of league competitions (Sass, 2012, 2016), the governance and ownership structure of clubs (Wilson *et al.*, 2013), and different financial aspects, mainly clubs' profitability (Francois *et al.*, 2022). Extant empirical evidence has centred on a single European league (e.g., Maclean *et al.*, 2022; Perechuda and Čater, 2022) or several leagues together, focusing on the Big Five leagues, English Premier League (EPL), Spanish LaLiga, German Bundesliga, Italian Serie A and French Ligue1 (e.g., Perechuda, 2020; Ruta *et al.*, 2022).

These studies have examined the impact of FFP on variables that measure profitability (e.g., Ahtiainen and Jarva, 2020) through longitudinal models that go up to 2017. From this set of studies, the more recent study is on English and French leagues and the effectiveness of FFP, which covered up to 2018 (Francois *et al.*, 2022), and on the EPL and the impact of FFP on financial distress, work that covers up to 2019 (Plumley *et al.*, 2021). These studies have achieved mixed results. While some studies (e.g., Nicoliello and Zampatti, 2016) have not found a significant impact on clubs' financial performance, other studies have found a significant, but marginal improvement in financial performance (Franck, 2018; Francois *et al.*, 2022).

Moreover, some studies have yielded mixed results, depending on the European league (e.g., Ahtiainen and Jarva, 2020) or club size (e.g., (Plumley *et al.*, 2021). These

differences suggest the existence of moderators that may explain the mixed evidence. Previous work has shown that the economic model of European football is shaped by size (e.g., Deloitte, 2023; Sass, 2012). Large clubs have access to a large market and thus have greater revenue potential and can generate more turnover than can smaller clubs (Sass, 2012). The reason is that the market potential of a club depends positively on its historical sporting and social success (Sass, 2016). As a result, large clubs have a greater economic margin to invest in better players which further widens the turnover gap with smaller clubs.

Given this model, previous studies have shown that large clubs become larger over time, giving them even more margin to invest and spend and to meet FFP break-even constraint, thus improving their profitability, liquidity and solvency. In contrast, small clubs do not have this margin to comply with the break-even rule and improve their financial performance. Thus, they cannot spend and invest in improving their positions in a market as competitive as LaLiga, increasing the dominance of large clubs (Plumley et al., 2019; Sass, 2012, 2016).

We argue that the impact of FFP varies by club size: due to their economic models, large clubs meet FFP while continuing to grow, but small clubs lack the financial margin and must adjust their investments based on income. Therefore, we expect small clubs to have improved financial performance under FFP, while large clubs are unlikely to significantly improve because they have made the minimum effort to comply with FFP rules and, therefore, have dedicated the maximum resources to spend and invest in the best players to improve their competitive positions. After FFP, these differences also lead to greater financial and sports imbalances between large clubs and the rest.

We test these hypotheses in the Spanish LaLiga, for two reasons. First, according to the International Federation of Football History and Statistics (IFFHS), it was the second most important European League in 2022, the first worldwide from 2008 to 2018, and the second European league by revenue (Deloitte, 2021) after the EPL. Second, the composition of LaLiga in terms of club size makes it the perfect context to test the hypotheses: there are two of the most important European clubs at the sports and economic levels which means that in LaLiga, the difference between the largest clubs and the rest is more acute (Barajas and Rodríguez, 2010; Fernández-Villarino and Domínguez-Gómez, 2022; McFarland, 2007). In addition, there are five large-medium-sized clubs which helps in the analysis of the different impacts of FFP that consider club size.

We enrich the extant empirical evidence in two ways. First, a significant period is analysed, from 2008 to 2019, four seasons before UEFA's FFP and eight seasons after its adoption. We do not consider the financial years after the COVID-19 pandemic to avoid misrepresenting the conclusions. Including a longer period in the analysis allows for the identification of both the short and long-term influences of the regulation in LaLiga, which may facilitate comparisons with the results obtained for other European leagues (e.g., Francois *et al.*, 2022; Plumley *et al.*, 2021). Second, we employ a multifaceted measure of financial performance, encompassing profitability, liquidity, and solvency measures (Alaminos *et al.*, 2020; Barajas and Rodríguez, 2013; Dimitropoulos and Limperopoulos, 2014) to obtain a more granular and comprehensive understanding of the impact of FFP on the financial sustainability of Spanish clubs.

Confirming our hypotheses, the results show that FFP has contributed to improving the financial sustainability of Spanish football, although with mixed results depending on club size: profitability indicators improve for smaller clubs. However,

solvency ratios only improve for medium clubs, and there is no evidence that liquidity indicators grew after the regulation. Similarly, the results show that, after FFP, the economic inequality in LaLiga between the biggest clubs and the rest has also increased.

This article contributes to sports management scholarship by increasing our knowledge of the moderating factors that may impinge on the effectiveness of this regulation after its systematic application in recent years. The differential results observed for large and small clubs can explain and reconcile the different results obtained in the past. Moreover, we contribute to the critical and analytical discussion of the literature on FFP by suggesting that, after almost a decade of application, its effect on sustainability and financial performance is mixed, as it depends on the indicator considered and club size. These results are helpful for regulatory bodies, such as the UEFA, LaLiga managers, governments, club managers, and investors.

Literature Review

Neoclassical Economic Theory

According to neoclassical economic theory, companies have profit maximization (PM) as their primary objective (Rottenberg, 1956). In contrast to this theory, Sloane (1971) developed utility maximization (UM) theory, which explains that a football club is not a "neoclassical" economic subject whose main objective is to maximize its profit. Rather, its fundamental goal is to maximize its sporting results.

Over time, the literature has confirmed this theory (e.g., Ascari and Gagnepain, 2006; Dobson and Goddard, 2011; Nicoliello and Zampatti, 2016) about European football: its system is more competitive and less cooperative (promotion-relegation mechanism), and clubs are forced to invest in top talent as much as they can (no salary

cap). As several authors have defended (Ascari and Gagnepain, 2006; Dobson and Goddard, 2011), the different economic model of European leagues is due to the critical social roots of football: clubs are social institutions in their cities, regions, and countries, which explains the institutional and financial support they receive from local and regional entities.

In contrast, American clubs seek profit maximization (e.g., Garcia-del-Barrio and Szymanski, 2009; Terrien *et al.*, 2017). Garcia-del-Barrio and Szymanski (2009) suggest that this is because clubs in American leagues tend to belong to larger commercial corporations whose decision-makers aim to maximize profits; therefore, according to Terrien *et al.* (2017), the American league system is more cooperative, allowing teams to optimize their costs (e.g., salary caps) to maximize their benefits. In American sports, competition is between each professional league and other forms of entertainment and leisure (Neale, 1964).

Utility Maximization and Football as a Mass Sport

Following UM theory, the literature has shown that higher spending on players allows for better positions in the competition (Szymanski, 2003). To finance this constant increase in spending, professional football clubs have mainly resorted to selling broadcasting rights for different sports competitions, national and European leagues. Since the 1920s, football has become a mass sport (McFarland, 2007), and broadcasting sporting events has become a fundamental part of the sports business in general and in football in particular (Buraimo *et al.*, 2010). At the same time, audience size has been growing at national, European, and global levels, especially in Asian markets, giving rise to a sports product that has increasingly become a form of entertainment (Desbordes, 2007).

Numerous studies have demonstrated the growing importance of income from TV rights to European professional football, which is becoming the primary income source in addition to merchandising and sponsorships. TV rights have caused a revolution in the economic development of European football and especially of the "Big Five" (e.g., Buraimo *et al.*, 2010; Buraimo *et al.*, 2006; Peeters and Szymanski, 2014). The development of TV sports broadcasting has led American professional sports and European professional football to become sports entertainment phenomena internationally, comparable only to Olympic Games, which are universal but occur less frequently (Desbordes, 2007; Portet, 2011).

Despite the evolution of professional football towards a global entertainment activity, European football clubs' financial models have resulted in permanent economic deficits for them because spending on players has been higher than the income obtained. Several studies have analysed this evolution (Barajas and Rodríguez, 2013; Barajas and Urrutia, 2007; Dobson and Goddard, 2011). All have concluded that the increase in revenue from TV rights did not result in increased profits and profitability for professional football.

This European football evolution has led to the concept of large and small clubs (Barajas and Urrutia, 2007; Boscá *et al.*, 2008). Historically, a club has been considered large when it achieved significant sporting successes at national and international levels and had a large social mass of fans. In contrast, a small club has not achieved as many sporting successes and has a smaller social mass of followers. However, based on high income from television rights and football marketing through the mass media, the classification of clubs as large or small is now based on media visibility and revenues (Buraimo *et al.*, 2010; McFarland, 2007). Therefore, a club is considered large when it has high revenues (turnover) and makes high investments in the squad (players' transfer

rights and salary costs), which have been achieved through a sizeable social mass and relevant sporting successes at national and international levels.

Financially Unsustainable Model

The ongoing spending on better players to improve sports results has created an unstainable financial model for European clubs that is characterized by high indebtedness, and low profitability, liquidity, and solvency (Boscá *et al.*, 2008; Dobson and Goddard, 2011; Peeters and Szymanski, 2014). Boscá *et al.* (2008) demonstrate that high debt levels were similar across European leagues and clubs, with medium and small clubs having greater debt probably because large clubs could generate enough profits to sustain themselves financially (Dobson and Goddard, 2011). Smaller teams, with less earning power and a weaker ability to develop economies of scale, were likely to continue generating losses and increasing their indebtedness, enhancing the risk of financial insolvency (Peeters and Szymanski, 2014; Preuss *et al.*, 2014).

To date, there is extensive literature on the economic difficulties of companies and predictions of financial insolvency (Alaminos *et al.*, 2020; Alaminos and Fernández, 2019; Altman, 1968; Beaver, 1966; Szymanski, 2010, 2017), starting with the seminal study by Beaver (1966) on insolvency prediction. All of these studies have determined that the variables of profitability, liquidity, solvency, and sports performance are the most significant in explaining clubs' financial performance. This empirical research shows that low profitability, liquidity, and solvency, poor sports performance, and small size of club markets are the best predictors of football's financial distress.

Financial regulations and their impact on clubs' performance.

Faced with the difficult financial situation of many clubs participating in European competitions, the UEFA Executive Committee developed the financial control regulation or FFP in September 2009, which was implemented in the 2011 season (UEFA, 2018). The objective of UEFA's FFP is to reduce the unsustainable financial game in European football due to nonpayment of debts to other clubs, employees, and public administrations and to reduce the "financial doping" that occurs due to excessive financing to cover losses derived from expenses related to player transfers (Peeters and Szymanski, 2014). FFP focuses on controlling the finances of European clubs (Ahtiainen and Jarva, 2020; Alaminos et al., 2020). Specifically, UEFA established a monitoring or follow-up system for clubs through the UEFA Club Financial Control Body, whose mission is "to ensure equal treatment of all licences and guarantee total confidentiality of all information provided" (UEFA, 2018).

The main objectives, monitoring requirements, and scope of application of the financial regulation under UEFA's FFP are explained below (UEFA, 2018):

1. Objectives: UEFA's FFP aims to guarantee European football clubs' long-term financial viability and sustainability. The regulation tries to improve the transparency, discipline, rationality, and credibility of clubs' finances. To do this, it encourages clubs to spend responsibly based on their income to achieve long-term results. Likewise, it seeks to protect the creditors of the clubs, guaranteeing that clubs pay their liabilities to other clubs, fiscal and social administrations, and employees.

2. Monitoring requirements: UEFA's FFP has two main elements: the break-even requirement and the no-overdue-payables rule (Francois *et al.,* 2022; Peeters and Szymanski, 2014). The break-even requirement is as follows:

(i) The break-even result is calculated as the difference between relevant income and relevant expenses.

(ii) The relevant income and expenses correspond to the sports activity. They do not include the results from the disposal and depreciation of certain tangible and intangible fixed assets and tax revenues or expenses.

(iii) The break-even result is monitored for each season on the basis of the results of the completed season (reporting period T) and the two previous seasons (reporting periods T-1 and T-2).

(iv) UEFA's FFP establishes a maximum deficit that each club can have to remain in compliance with the break-even result rule. The maximum acceptable aggregate deviation for every three years is a deficit of EUR 5 million. This limit can exceed EUR 30 million if the excess is covered with contributions from members related to the club.

The no-overdue-debts regulation requires clubs not to have overdue debts with their creditors (other clubs, employees, and social/tax authorities) on 30 June and 30 September.

3. Scope of application: Clubs qualified for a UEFA competition, except the UEFA Women's Champions League, are subject to the monitoring requirements established by UEFA's FFP. The implementation of FFP had a transition period between 2011 and 2014, with the rules entirely applied since 2015.

Although UEFA's FFP directly affects only clubs participating in UEFA competitions, several European leagues, including LaLiga, have implemented their own financial control measures. LaLiga introduced the LaLiga economic control regulations (LEC) in 2013, which align with the objectives, requirements, and guidelines of UEFA's FFP and apply to all clubs in the first and second divisions. The LEC closely mirrors UEFA's FFP in terms of break-even criteria, overdue payments, and other stipulations. Consequently, since 2013 all Spanish football clubs have been subject to equivalent

financial control regulations, through participation in either the Spanish divisions or UEFA competitions. Moreover, LaLiga has implemented additional financial control measures, such as verifying that each club's forecast budget meets the prescribed criteria before the start of the season (Fernández-Villarino and Domínguez-Gómez, 2022). For the purposes of this study, from now in, we will use the abbreviation FFP to refer, in general, to the applicable regulations, be they the UEFA or LaLiga financial regulations. We will specify UEFA's FFP when referring to UEFA's specific rules and use LEC to denote the regulations implemented by LaLiga.

Recent literature has examined different aspects of FFP. First, several studies have demonstrated that the main FFP rule, the break-even requirement is less effective at improving the competitiveness of European professional football leagues compared to the salary cap implemented in American professional leagues. Thus, FFP did not offer a real fair play that would help improve the degree of competitiveness of European football, but reflected a restriction on the competition in the player market to benefit the largest clubs since it maintained their existing status quo (Peeters and Szymanski, 2014; Szymanski, 2014, 2017).

This effect occurred because the regulation had an objective of efficiency and economic sustainability and less so of improving fairness since it sought, above all, to reduce the risk of clubs' financial insolvency (Preuss *et al.*, 2014; Szymanski, 2014). This insolvency is due to the great economic difference between large and small clubs because large clubs have access to a much larger potential market, which determines that they have turnovers (tv rights, commercial, and match day revenues) much higher than small clubs. This grants large clubs greater capacity to invest in the best players in the market to improve their competitive positions and, simultaneously, their results; for

this, they could comply with the break-even rule. Thus, we do not expect much influence of FFP on the profitability of large clubs.

In contrast, small clubs will see their ability to improve their competitive position limited since to comply with FFP and improve their financial performance, they must limit their investments in players or increase their profits from the sale of their existing players. Thus, FFP could limit the opportunities of small clubs (Plumley *et al*., 2019; Preuss *et al.*, 2014; Szymanski, 2014) and increase the differences between large and small clubs, causing a more competitive imbalance (Birkhäuser *et al.*, 2019; Plumley *et al.*, 2019).

Second, several studies have analysed the impact of the FFP on the financial performance of European football clubs through the analysis of profitability indicators (Ahtiainen and Jarva, 2020; Barajas *et al.*, 2017; Francois *et al.*, 2022; Nicoliello and Zampatti, 2016), liquidity (Barajas et al., 2017) and solvency (Barajas *et al.*, 2017; Plumley *et al.*, 2021). To do this, they have studied clubs from several leagues (Ahtiainen and Jarva, 2020; Barajas *et al.*, 2017; Francois *et al.*, 2022) or a single league (Dimitropoulos and Limperopoulos, 2014; Fernández-Villarino and Domínguez-Gómez, 2022; Nicoliello and Zampatti, 2016).

However, few previous works have carried out this analysis separately between large and small clubs. In general, turnover has been used as a moderating variable for club size (Plumley et al., 2021), and participation in European competitions has also been used as a proxy for size (Francois *et al*., 2022).

The results obtained are mixed. Most work shows that after FFP, the financial stability of the clubs has increased (Frank, 2018) and the positive impact on financial performance has been relatively small (Athiainen and Jarva, 2020) with a relatively greater impact on profitability (Fernandez -Villarino and Domínguez-Gómez, 2022) and

lesser impact on other indicators. The few studies that have used size as a moderator have also had mixed results. Plumley *et al.* (2021) find that English professional football still faces financial difficulties but suggest that the EPL Big 6 appears to have greater financial performance than the rest of the EPL. Francois *et al.* (2022) show that FFP had some positive impacts on the financial performance of clubs in the English (EPL) and French (Ligue1) professional leagues. However, their study unveils differences in the results obtained between euro-oriented and noneuro-oriented clubs. In EPL, the profitability indicators in both groups improved after FFP. However, in Ligue1, only some indicators significantly improved, and only for noneuro-oriented clubs.

Finally, and outside this study's analysis period, it is important to explain that in 2022, the UEFA Executive Committee approved the UEFA Club Licensing and Financial Sustainability Regulations (UCLFS) (UEFA, 2022), which replaced the previous UEFA's FFP. The UCLFS are based on financial control requirements introduced in 2011 but include a new cost-control objective. Clubs will be subjected to the squad cost control rule (SCC), which limits spending on player and coach salaries, transfers, and agent fees to 70% of club revenue. The implementation is gradual, with the percentage set at 90% in the season starting in 2023, 80% in 2024, and 70% in 2025. This requirement encourages costs more related to performance (UEFA, 2022).

Therefore, FFP has been in force for approximately 10 years. Throughout this period, as explained, it has been severely criticized, mainly due to its anti-competitive character that advantages large clubs (Dunbar and Middleton, 2022).

Hypotheses

It is apparent that FFP has yielded mixed results in football clubs' financial and sporting performance. These mixed results suggest that club size may be a moderator of the impact of FFP on clubs' financial performance, which leads to considering differential effects for larger clubs vs. medium and small clubs. As previously explained, the economy of European professional football is based on maximizing its sporting performance over its financial performance. The basis of this behaviour has been the great social implantation of football in Europe, allowing it to develop using the maximum possible economic resources without worrying about its financial sustainability and leading its financial performance to reflect very high indebtedness, with low solvency, liquidity, and profitability.

However, clubs have uneven masses of fans. Hence, clubs with the most fans have access to a larger potential market, allowing them to generate more income to invest in their sporting development. This situation has increased the economic and sporting differences between the largest clubs and the rest.

Previous work has suggested that because of these differences between large and small clubs, club size may moderate the impact that FFP has had on clubs' financial performance since larger clubs are more economically profitable than the smallest clubs and are better able to comply with the rules. Small clubs should have experienced the greatest impact on financial performance, probably at the cost of their competitiveness in sports competition, which will have raised the level of economic and sporting inequality between the largest clubs and the rest.

Therefore, based on the previous literature and with the objective of this research being to study the impact of FFP, we formally hypothesize the following:

H1. The introduction of FFP significantly and positively influences (does not significantly influence) the financial performance (profitability, liquidity, and solvency) of smaller (larger) clubs.

In addition, as previously explained, several studies have suggested that the existing economic model for European football makes large clubs increasingly larger, increasing the imbalance between them and small clubs (Birkhäuser, 2019); moreover, after FFP, this situation has expanded the status quo of the large clubs (Plumley *et al.*, 2019). We test whether the introduction of FFP has increased the economic gap between the largest clubs and the rest of the clubs in Spanish LaLiga, or formally:

H2. The introduction of FFP significantly increases the economic gap between large and small clubs.

Methodology and Data

Data selection procedure

The scope of this research is exclusively focused on the professional teams that have participated in the first division of LaLiga, currently made up of 20 teams competing each season.

Twelve seasons from 2008 to 2019, were selected. The 2008 season was the first to have the Annual Accounts formulated by the clubs using the new Spanish Accounting Plan approved in 2007 and based on harmonization with international accounting regulations (IFRS). From 2008 all economic indicators have been homogeneous. The final point of the series was the 2019 season, which was the season before the COVID-

19 pandemic impacted the world and, specifically, professional football's financial performance.

From 2008 to 2019, 38 clubs competed in the first division of LaLiga. However, for the data sample to be meaningful and to obtain robust results, we have screened out clubs that had a minimal run in the competition and were subject to promotion and relegation. Of the 38 clubs, 16 were in the first division for less than half of the analysed seasons and were therefore excluded. As a result, the economic and financial variables of 22 clubs were included. As previously explained, all these clubs have been subject to relatively similar FFP financial control regulations. If they have participated in UEFA competitions, they have been subject to UEFA's FFP or to LEC if they have only participated in LaLiga.

We analyse 203 financial statements to determine the impact of FFP on the financial performance of Spanish professional clubs. The accounting information is obtained from the Annual Accounts of the football clubs registered in the Mercantile Registry of Spanish capital companies, from the SABI® database, or directly from the clubs.

Methodology strategy

In seeking to confirm our hypotheses, we investigate the impact of FFP and club size on financial performance and the economic gap between large and small clubs. To test the first hypothesis, we used panel regression models (Hsiao, 2007). To test the second hypothesis, we used the methodological approach of the Gini index. This index adapts to any variable that can be analysed in terms of equality or inequality, which is why it has been used in previous work that measure inequality in different areas of football (e.g., Gasparetto *et al.*, 2022; Toma and Campobasso, 2023).

Variables definition

First, we explain the dependent variables used in the regression models. We compute the main ratios reported in the literature that measure the financial performance of Spanish clubs (e.g., Alaminos *et al.*, 2020; Dimitropoulos and Limperopoulos, 2014): profitability, liquidity, solvency, and indebtedness ratios. We calculate eight financial ratios, three corresponding to liquidity, two to solvency and indebtedness, and three to profitability from clubs' financial statements. Table I shows the financial ratios and their formulas.

[Insert Table I here]

Furthermore, we group these ratios into three financial dimensions to achieve a higher-level picture of the relationship between FFP and the financial dimensions of football teams. We do that by carrying out a principal components analysis (PCA) to reduce the original ratios to a smaller set of variables. This multivariate statistical technique is applied to reduce the dimensionality of a dataset to improve its understanding. From a large number of highly correlated original variables, it is possible to calculate a set of artificial variables called principal components. These components are linear combinations of the original variables and are not correlated. If only the first principal components are kept, the number of original variables is reduced to a much smaller number, with minimal loss of information (Hair et al., 2014).

In this paper, PCA is applied to improve the interpretation and reduce the original set of highly correlated financial ratios to just three components or dimensions that, fortunately, have immediate implications, as discussed in the next paragraphs.

The Kaiser–Meyer–Olkin (KMO) statistic for measuring the sampling adequacy of this study is 0.674, which is acceptable. An analysis of eigenvalues suggests that the

optimal number of components to retain is three and 87.8% of the original variance of the ratios is explained.

We apply a varimax rotation (Kaiser normalization) to facilitate our interpretation of the components, resulting in the factor loading matrix shown in Table II. As the factor loadings can be interpreted as a correlation between the original variables and each component (rotated), the following designations may be given to the components. Component 1, depicting positive correlations among the ratios for margins and ROA, is labelled PROFITABILITY (representing 35.1% of the total variability). Component 2, positively correlated with current, quick, and cash ratios, is labelled LIQUIDITY (representing 31.6% of the total variability). Component 3, is positively correlated with the ratio of debt to assets and negatively correlated with the solvency ratio, and has a reversed scale (multiply the factor scores by -1). It is labelled SOLVENCY (represents 21.1% of the total variability).

[Insert Table II here]

Second, the independent variable used in the regression models in this paper is as follows:

(1) FFP is a variable that reflects the application of the financial control regulation (either the UEFA or LaLiga regulations since both started on similar dates). Since the implementation occurred gradually over several seasons, the variable takes the value of 0 up to and including the 2011 season; 0.25 in the 2012 season; 0.50 in the 2013 season; 0.75 in the 2014 season; and 1 from the 2015 season.

Finally, the control variables used in the regression models are as follows:

(1) Size: This is a composite variable computed as the first component of a PCA conducted over four variables that jointly determine economic club size:

turnover, assets, players' salary costs, and amortization of players' transfer rights (all measured in logs). These variables reflect the indicators used for measuring club size: income, players' investments, and players' cost capacity. This component explained 90.13% of the original variability.

(2) Ln (Transfers): To control for resources generated by clubs, we use the results of the sale of players' transfer rights that are not included in turnover and that can affect the year's financial performance.

(3) Title (t-1|t-2): We consider whether the team won a national or international title in the previous two years to control for whether sports success has affected the financial performance of the year analysed. This control variable is a dummy that takes the value 1 if the team won a championship in the two previous years and 0 otherwise.

(4) UEFA competition: This control variable is a dummy that takes the value 1 if the club competed in a UEFA European championship that year and 0 if it only participated in the Spanish LaLiga championship. It tries to capture differences in financial performance depending on whether the club is directly subject to UEFA's FFP when participating in European competition or only to LEC.

We estimate several panel data regressions to analyse the impact of Size and FFP on the financial dimensions to evaluate whether the evolution of Size and the implementation of FFP affected the different financial dimensions of football teams. Equation 1 shows the general structure of each estimated panel equation.

$$Component_{it} = \alpha_i + \beta_1 FFP_{it} + \beta_2 Size_{it} + \beta_3 Ln\ (Transfer)_{it} + \beta_4\ Title\ (t\text{-}1|t\text{-}2)_{it} + \beta_5 UEFAcompetition_{it} + \varepsilon_{it} \quad [1],$$

β_1 is the parameter that captures the effect of FFP on each of the financial dimensions in each regression, and ε is the usual error term.

We perform the Hausman test for each model to decide whether the models are estimated using the random or fixed effects estimator. In all cases, the test did not reject the null hypothesis, so the estimation was performed using a random effects estimator.

We carry out this analysis for the whole sample and for the sample split into three segments: large clubs, medium-sized clubs, and the remainder (small clubs). Previous works have segmented clubs based on their turnover (e.g., Plumley *et al.*, 2021) or participation in European competitions (e.g., Francois *et al.*, 2022). Based on the previous literature (Barajas and Urrutia, 2007; Desbordes, 2007; Dobson and Goddard, 2011; Sass, 2012), we considered not only economic size factors but also sporting and social size to identify large, medium-sized, and small clubs for the segmentation; to this end, we use a multidimensional measure encompassing a set of economic, sports, and social indicators. To determine clubs' economic size, we use the same variables used for the composite variable Size: turnover, assets, players' salary costs, and amortization of players' transfer rights in the sample period. For these indicators, the average of the period considered is calculated. To reflect the sporting size during the period considered, we choose the number of LaLiga and UEFA Champions League titles and number of participations in the UEFA Champions League competition. Finally, social size is measured as the number of followers on Twitter that each club had in 2019 as a proxy.

To determine the composition of each segment, we calculate the percentage that each club represents of each variable over the total of the 22 clubs analysed in the sample. Then we calculate each club's average for the set of eight indicators and order the clubs from the highest percentage of the total to the lowest (see Table III).

Based on this calculation, we obtain the following composition of the three segments (see Table III). The first segment includes the three largest clubs, labelled Big-3: Real Madrid, Barcelona, and Club Atlético de Madrid. The Big-3 group accounts for 70.5% of the average of the variables for the period 2008-2019. The second segment retains the fourth medium-sized clubs, labelled Big-4-to-7-medium: Valencia, Sevilla, Villarreal, and Athletic Club. The Big-4-to-7-medium group accounts for 14.4% of the average of the variables for the period. Finally, the last segment of fifteen clubs, labelled Remainder-small, accounts for 15.1% of the average of the variables for the period. Therefore, the three largest clubs represent 70% of LaLiga, the seven large to medium-sized clubs represent 85%, and the remaining fifteen small clubs represent 15% of LaLiga.

[Insert Table III here]

Gini Index

To test the second hypothesis, the degree of economic inequality between LaLiga clubs is measured using the Gini index (Gini, 1912), which is widely used in economics to measure the unequal distribution of wealth in a country, the gap between the rich and the poor, based on the distribution of income among its population.

The Gini index is related to the so-called Lorenz curve, which graphically represents the cumulative proportion of the individuals (in this case, the football clubs) on the X-axis and the corresponding total cumulative proportion of the analysed variable on the Y-axis. The Gini index represents twice the area between the Lorenz curve and the bisector of the first quadrant (Farris, 2010).

We calculated the Gini index using the same economic variables previously selected to determine if a club belongs to the large, medium, and small segments

(turnover, assets, players' salary costs, and amortization of players' transfer rights). For each variable, a value between 0 and 1 was obtained, where 0 represents the maximum equality (all clubs have the same value) and 1 illustrates the maximum inequality (one club has the total value, and the rest have a zero value).

We applied the Gini index to LaLiga clubs and for the selected variables three times in the period under examination, i.e., before the implementation of the FFP (baseline 2008), at the time when the regulations were fully implemented (2015) and finally in the last part of the analysis (2019).

Empirical findings

Descriptive statistics, correlations, and regression results

Table IV shows the statistics of the analysed variables, including both the dependent variables (liquidity, solvency, and profitability ratios) and the independent variables that, according to the theoretical framework analysed, impact the financial performance of the clubs as measured through the ratios. Table V shows the correlations between these variables.

[Insert Table IV here]

[Insert Table V here]

Table VI shows the estimates of the profitability financial component for the panel regression models for FFP, Size, Ln(Transfer), Title (t-1|t-2), and UEFA competition variables. Tables VII and VIII show the same for the liquidity and solvency financial components, respectively.

[Insert Table VI here]

[Insert Table VII here]

[Insert Table VIII here]

Table IX shows the evolution of the Gini index for the analysed variables of turnover, assets, players' salary costs, and amortization of players' transfer rights.

[Insert Table IX here]

Hypotheses Testing

We can see the results in Tables VI, VII, and VIII for the three financial dimensions. These results are similar to those obtained for the eight financial ratios. First, we examine the dimension of profitability (C1 Profitability). As we can see in Table VI, there is evidence that FFP had a significantly high and positive impact on the profitability of small clubs (β=1.5886, $p<0.01$ for Remainder-small). There is also evidence that Size had a significant high but negative impact on the profitability of small clubs (β=-0.8565, $p<0.01$ for Remainder-small). Additionally, the results show that player transfer results had a significantly high and positive impact, albeit reduced, on the large and medium-sized clubs (β=0.0070, $p<0.01$ for Big-3 and β=0.0281, $p<0.01$ for Big-4-to-7-medium). It is also observed that participating in any UEFA competition significantly and positively impacted small clubs (β=1.5052, $p<0.05$ for Remainder-small).

Second, regarding the liquidity dimension (C2 Liquidity), the results in Table VII show that, as observed for profitability, the results from player transfers had a significantly high and slightly positive impact on the liquidity of the largest clubs (β=0.0122, $p<0.01$ for Big-3).

Third, regarding the solvency dimension (C3 Solvency), the results in Table VIII show that FFP had a significantly high and positive impact on the solvency of medium-

sized clubs (β=1.7754, p<0.01 for Big-4-to-7-medium). Size had a significantly high and positive effect on the solvency of small clubs (β=1.0368, p<0.01 for Remainder-small). Additionally, player transfer results had a significantly high and slightly positive impact on the solvency of the largest clubs (β=0.0159, p<0.01 for Big-3), as occurred with respect to the liquidity and profitability components. However, player transfer results had a significantly high and slightly negative impact on the solvency of the medium-sized clubs ((β=-0.0258, p<0.01 for Big-4-to-7-medium).

These results provide evidence that club size moderates the impact of FFP on clubs' profitability because it shows a high and positive significant effect only among small clubs. However, we could not find evidence of a moderating effect on the liquidity dimension. There is no evidence that the liquidity indicator grew under the regulation. Finally, regarding solvency, the results show highly significant and positive improvement under FFP in medium-sized clubs.

Together, these results provide evidence that supports the hypothesis that the introduction of FFP has had a significant and positive influence on the profitability of smaller clubs. Nevertheless, they do not provide evidence that it has influenced their liquidity and solvency.

To test the second hypothesis (whether introducing FFP has increased the economic gap between the largest clubs and the rest), the Gini index applied to the economic variables of turnover, assets, players' salary costs, and amortization of players' transfer rights was used. As Table IX shows, the Gini index for turnover in 2008 was 0.4981, which grew to 0.5490 in 2015 and 0.5350 in 2019. For assets, it was 0.4817 in 2008, rising to 0.5459 in 2015 and 0.5558 in 2019. Player salary costs were 0.4248 in 2008; they grew to 0.5230 in 2015 and 0.5271 in 2019. Finally, the Gini index for amortization of players' transfer rights was 0.4806 in 2008, rising to 0.6682 in 2015 and

0.5934 in 2019. These results show that the degree of inequality was below 0.5 in 2018, rising above 0.5 in 2015 and 2019, except for turnover and amortization of players' transfer rights, which decreased compared to 2015 but were higher than in 2008. Therefore, the results show that economic inequality between the largest and smallest clubs grew after FFP, thus providing support for H2.

Conclusion

UEFA introduced the FFP in 2011 to enhance the financial standing of clubs, decrease the possibility of insolvency, and strengthen the competitiveness of European football competitions (Plumley *et al*, 2019; Szymanski, 2014). Recent studies have criticized the limited impact of the FFP on the financial sustainability of European football (Ahtiainen and Jarva, 2020; Franck, 2018). By examining the implementation of FFP in a sample of 22 clubs and twelve seasons, the present study advances the current knowledge on the effects of FFP in the football industry by providing evidence that FFP had a relatively small and uneven impact on clubs' financial performance and affected profitability, solvency, and liquidity. In particular, we contribute to the literature by showing that club size moderates the impact of FFP on clubs' financial performance. To our knowledge, this is the first study that analyses three segments: large, medium-sized, and small clubs. Our results show that small clubs but not large and medium-sized clubs increased their profitability under FFP. FFP has also improved solvency only for medium-sized clubs and has not influenced clubs' liquidity.

Furthermore, the findings provide insights into the impact of LEC on Spanish small clubs. Had LEC not been implemented, only small clubs participating in European competitions would have been subject to financial control regulations, while others would have been exempt. As a result, the positive effects on profitability

resulting from the financial control measures would not be observable among clubs without European participation. Furthermore, the results corroborate that the participation of small clubs in UEFA competitions positively influences their profitability, which can be primarily attributed to their adherence to UEFA's FFP.

In addition, the present study reflects on the effect of FFP on the economic gap between large clubs and the rest. Despite the fact that FFP improves small clubs' profitability, our findings show that after FFP, the inequality between large and small clubs has increased, substantiating the critique that FFP has raised inequality in European football. As many authors have claimed, FFP may favour the status quo of the largest over the rest (e.g., Szymanski, 2014; Sass, 2012, 2016; Plumley *et al.*, 2021; Preuss *et al.*, 2014).

These findings have practical implications for different stakeholders in the football industry. Regarding policy-makers and football governing bodies, our results reinforce previous critiques of FFP (e.g., Francois *et al.*, 2022) that advocated the necessity of ongoing evaluation and adjustment of the regulations to foster a more balanced and sustainable football landscape for clubs of all sizes. Indeed, based on evidence from existing studies (e.g., Plumley *et al.*, 2021), including this one, if larger clubs continue to access a larger market and have greater scope to remain compliant, the gap between larger and smaller clubs will increase. As long as measures are not taken to redistribute the income generated by European football, it is likely that the large ones will grow and the small ones will shrink.

Regarding small clubs, our study shows that under the FFP monitoring of break-even results and controls on expenses, small clubs have reduced their risk of financial distress and improved their long-term sustainability through improved profitability. However, we show that this regulation decreases their competitive position relative to

wealthier clubs that can spend more freely. Financial restrictions may encourage small clubs to become more strategic in allocating their limited resources. One recommendation could be to focus on cost-effective player recruitment strategies and talent development, investing in robust youth systems. By nurturing and promoting young players, these clubs can build a sustainable talent pipeline, which may help them compete at higher levels and offer a source of income through player transfers.

As stated before, in 2022, UEFA's FFP has been updated to UCLFS. The question is whether these changes can significantly improve clubs' financial sustainability. UCLFS introduces revenue-linked cost controls through the new 70% salary-cost rule. However, it does not establish salary caps similar to those in American leagues or regulate a more equitable income distribution among the competition. Thus, the new regulations seem to continue to focus on cost controls to improve financial sustainability.

Regarding future lines of research, we believe that to create more adequate regulations, it is necessary to expand our knowledge of different alternatives for further improving the financial sustainability of European football while at the same time reducing the economic inequality between the largest clubs and the rest. Simulations could analyse the effects that FFP would have had if, since 2011, different rules had been established for the distribution of income from more balanced competitions and the new limit on salary costs to 70% of revenue.

This paper is not exempt from certain constraints. The main limitation is that we focused the analysis only on financial performance, ignoring competitive performance variables. As the relationship between both is well stated, we could also have analysed the effect on competitive performance. We suggest that future research replicate the present study, analysing financial and competitive performance variables.

In conclusion, our article offers new perspectives on FFP with theoretical and practical implications. We extend the importance of reviewing existing regulations and promoting a more equitable redistribution of resources from the perspective of the importance of club size in football.

References

Ahtiainen, S. and Jarva, H. (2020), "Has UEFA's financial fair play regulation increased football clubs' profitability?", *European Sport Management Quarterly*, Vol. 22 No. 4, pp.569-587. https://doi.org/10.1080/16184742.2020.1820062.

Alaminos, D., Esteban, I. and Fernández-Gámez, M.A. (2020), "Financial performance analysis in European football clubs", *Entropy*, Vol. 22 No. 9, pp.1-16. https://doi.org/10.3390/e22091056.

Alaminos, D. and Fernández, M.Á. (2019), "Why do football clubs fail financially? A financial distress prediction model for European professional football industry", *PLoS One*, Vol. 14 No. 12, pp.1-15. https://doi.org/10.1371/journal.pone.0225989.

Altman, E.I. (1968), "Financial ratios, discriminant analysis and the prediction of corporate bankruptcy", *The Journal of Finance*, Vol. 23 No. 4, pp.589-609. https://doi.org/10.1111/j.1540-6261.1968.tb00843.x.

Ascari, G. and Gagnepain, P. (2006), "Spanish football", *Journal of Sports Economics*, Vol. 7 No. 1, pp.76-89. https://doi.org/10.1177/1527002505282869.

Barajas, A., Castro-Limeres, O., & Gasparetto, T. (2017). "Application of MCDA to evaluate financial fair play and financial stability in european football clubs", *Journal of Sports Economics & Management*, Vol. 7 No. 3, pp. 143-164.

Barajas, A. and Rodríguez, P. (2013), "Spanish football in need of financial therapy: cut expenses and inject capital", *International Journal of Sport Finance*, Vol. 9 No. 1, pp.73-90.

Barajas, A. and Urrutia, I. (2007), "Economic impact of support in Spanish professional football", *International Journal of Sports Marketing and Sponsorship*, Vol. 8 No. 3, pp.272-280. https://doi.org/10.1108/ijsms-08-03-2007-b007.

Beaver, W.H. (1966), "Financial ratios as predictors of failure", *Journal of Accounting Research*, Vol. 4, pp.71-111. https://doi.org/10.2307/2490171.

Birkhäuser, S., Kaserer, C. and Urban, D. (2019), "Did UEFA's financial fair play harm competition in European football leagues?", *Review of Managerial Science*, Vol. 13 No. 1, pp.113-145. https://doi.org/10.1007/s11846-017-0246-z.

Boscá, J.E., Liern, V., Martínez, A. and Sala, R. (2008), "The spanish football crisis", *European Sport Management Quarterly*, Vol. 8 No. 2, pp.165-177. https://doi.org/10.1080/16184740802024476.

Buraimo, B., Paramio, J.L. and Campos, C. (2010), "The impact of televised football on stadium attendances in English and Spanish league football", *Soccer and Society*, Vol. 11 No. 4, pp.461-474. https://doi.org/10.1080/14660971003780388.

Buraimo, B., Simmons, R., & Szymanski, S. (2006). "English football", *Journal of sports economics*, Vol. 7 No. 1, pp.29-46.

Deloitte (2021), *Annual Review of Football Finance:Riding the challenge,* Deloitte Sports Business Group, Manchester.

Deloitte (2023*), Deloitte Football Money League 2023*, Deloitte Sports Business Group, Manchester.

Desbordes, M. (2007), *Marketing and Football: An International Perspective*, Elsevier, London.

Dimitropoulos, P.E. and Limperopoulos, V. (2014), "Player contracts, athletic and financial performance of the Greek football clubs", *Global Business and Economics Review*, Vol. 16 No. 2, pp.123-141. https://doi.org/10.1504/gber.2014.060181.

Dobson, S. and Goddard, J. (2011), *The Economics of Football*, Cambridge University Press, Cambridge.

Dunbar, N., and Middleton, T. (2022). "UEFA'S financial fair play regulations: a good example of best practice governance by a sporting body?", *International Sports Law Journal*, pp.1-16. https://doi.org/10.1007/s40318-021-00207-w

Farris, F. A. (2010). "The gini index and measures of inequality", *American Mathematical Monthly*, Vol. 117 No. 10, pp.851–864. https://doi.org/10.4169/000298910X523344

Fernández-Villarino, R. and Domínguez-Gómez, J.A. (2022), "The financial impact of the financial fair play policy on Spanish football", *Sport, Business and Management: An International Journal*, Vol. 12 No. 2, pp.171-188. https://doi.org/10.1108/sbm-05-2021-0061.

Franck, E. (2018), "European club football after "five treatments" with financial fair play—time for an assessment", *International Journal of Financial Studies*, Vol. 6 No. 4, pp.97. https://doi.org/10.3390/ijfs6040097.

Francois, A., Dermit-Richard, N., Plumley, D., Wilson, R., and Heutte, N. (2022). "The effectiveness of UEFA Financial Fair-Play: Evidence from England and France, 2008-2018", *Sport, Business and Managemen: An International Journal*, Vol.

12 No. 3, pp.342–362. https://doi.org/https://doi.org/10.1108/SBM-03-2021-0024

Garcia-del-Barrio, P., and Szymanski, S. (2009). “Goal! profit maximization versus win maximization in soccer”, *Review of Industrial Organization*, Vol. 34 No. 1, pp.45–68. https://doi.org/10.1007/s11151-009-9203-6

Gasparetto, T., Mishchenko, D., and Zaitsev, E. (2022). “Factors influencing competitive balance across European football top tier leagues”*, Managerial and Decision Economics*. https://doi.org/10.1002/mde.3801

Gini, C. (1912). *Variabilità e Mutuabilità. Contributo allo Studio delle Distribuzioni e delle Relazioni*. C. Cuppini, Bologna

Hair, J.F., Black, W.C., Babin, B.J. and Anderson, R.E. (2014), *Multivariate Data Analysis* (7th ed.), Pearson, Essex.

Hsiao, C. (2007). “Panel data analysis-advantages and challenges”, *Test*, Vol. 16 No. 1, pp.1–22. https://doi.org/10.1007/s11749-007-0046-x

Leach, S. and Szymanski, S. (2015), “Manking money out of football”, *Scottish Journal of Political Economy*, Vol 62 No. 1, pp.25-50. https://doi.org/10.1111/sjpe.12065

McFarland, A. (2007), "Building a mass activity: fandom, class and business in early Spanish football", *Soccer & Society*, Vol. 8 No. 2-3, pp.205-220. https://doi.org/10.1080/14660970701224418.

Neale, W.C. (1964), "The peculiar economics of professional sports", *The Quarterly Journal of Economics*, Vol. 78 No. 1, pp.1-14. https://doi.org/10.2307/1880543.

Nicoliello, M. and Zampatti, D. (2016), "Football clubs’ profitability after the financial fair play regulation: evidence from Italy", *Sport, Business and Management: An*

International Journal, Vol. 6 No. 4, pp.460-475. https://doi.org/10.1108/sbm-07-2014-0037.

Peeters, T., and Szymanski, S. (2014). "Financial fair play in European football", *Economic Policy*, Vol. 29 No. 78, pp.343–390. https://doi.org/10.1111/1468-0327.12031

Perechuda, I. (2020). "Football Clubs Drowned by Players", *Polish Journal of Sport and Tourism*, Vol. 27 No. 1, pp.28–32. https://doi.org/10.2478/pjst-2020-0005

Perechuda, I., and Čater, T. (2022). "Influence of stakeholders' perception on value creation and measurement: the case of football clubs", *Sport, Business and Management: An International Journal*, Vol. 12 No. 1, pp.54–76. https://doi.org/10.1108/SBM-03-2021-0035

Plumley, D., Ramchandani, G.M. and Wilson, R. (2019), "The unintended consequence of financial fair play: an examination of competitive balance across five European football leagues", *Sport, Business and Management: An International Journal*, Vol. 9 No. 2, pp.118-133. https://doi.org/10.1108/sbm-03-2018-0025.

Plumley, D., Serbera, J.-P., and Wilson, R. (2021). "Too big to fail? Accounting for Predictions of Financial Distress in English Professional Football Clubs", *Journal of Applied Accounting Research*, Vol. 22 No. 1, pp.93–113. https://doi.org/10.1108/JAAR-05-2020-0095

Portet, X.G. (2011), "El fútbol y el negocio del entretenimiento global: los clubes como multinacionales del ocio", *Comunicacion y Sociedad*, Vol. 24 No. 1, pp.141-166.

Preuss, H., Haugen, K.K. and Schubert, M. (2014), "UEFA financial fair play: the curse of regulation", *European Journal of Sport Studies*, doi: 10.12863/ejssax2x1-2014x1. pp.33-51. https://doi.org/10.12863/ejssax2x1-2014x1.

Rottenberg, S. (1956), "The baseball players' labor market", *Journal of Political Economy*, Vol. 64 No. 3, pp.242-258. https://doi.org/10.1086/257790.

Ruta, D., Lorenzon, L., Lolli, L., and Gorlero, P. G. (2022). "The impact of money prizes from UEFA competitions on clubs' national performance", *Sport, Business and Management: An International Journal*, Vol. 12 No. 1, pp.77–92. https://doi.org/10.1108/SBM-03-2021-0036

Sass, M. (2012), "Long-term competitive balance under UEFA financial fair play regulations", *Universitat Magdeburg*, Working Paper No. 5, Magdeburg, pp. 1-11.

Sass, M. (2016). "Glory Hunters, Sugar Daddies, and Long-Term Competitive Balance Under UEFA Financial Fair Play", *Journal of Sports Economics*, Vol. 17 No. 2, pp.148–158. https://doi.org/10.1177/1527002514526412

Sloane, P.J. (1971), "The economics of professional football: the football club as a utility maximiser", *Scottish Journal of Political Economy*, Vol. 18 No. 2, pp.121-146. https://doi.org/10.1111/j.1467-9485.1971.tb00979.x.

Szymanski, S. (2003), "The economic design of sporting contests", *Journal of Economic Literature*, Vol. 41 No. 4, pp.1137-1187. https://doi.org/10.1257/jel.41.4.1137.

Szymanski, S. (2010), "The financial crisis and English football: the dog that will not bark", *International Journal of Sport Finance*, Vol. 5 No. 1, pp.28-40.

Szymanski, S. (2014), "Fair is foul: a critical analysis of UEFA financial fair play", *International Journal of Sport Finance*, Vol. 9 No. 3, pp.218-229.

Szymanski, S. (2017), "Entry into exit: insolvency in English professional football", *Scottish Journal of Political Economy*, Vol. 64 No. 4, pp.419-444. https://doi.org/10.1111/sjpe.12134.

Terrien, M., Scelles, N., Morrow, S., Maltese, L., and Durand, C. (2017). "The win/profit maximization debate: Strategic adaptation as the answer?", *Sport, Business and Management: An International Journal*, Vol. 7 No. 2, pp. 121–140. https://doi.org/https://doi.org/10.1108/SBM-10-2016-0064

Toma, P., and Campobasso, F. (2023). "Using data analytics to capture the strategic and financial decision-making of Europe's top football club", *Technological Forecasting and Social Change*, Vol. 186. https://doi.org/10.1016/j.techfore.2022.122116

UEFA (2018). *UEFA Club Licensing and Financial Fair Play Regulations (Edition 2018).*

UEFA. (2022). *UEFA Club Licensing and Financial Sustainability Regulations (Edition 2022).*

Wilson, R., Plumley, D., and Ramchandani, G. (2013). "The relationship between ownership structure and club performance in the English Premier League", *Sport, Business and Management: An International Journa*l, Vol. 3 No. 1, pp.19–36. https://doi.org/10.1108/20426781311316889

Table I. Ratios

Ratio	**Abbreviation**	**Formula**
Liquidity	L_1 Current ratio	Current Assets/Current Liabilities
	L_2 Quick ratio	[Current Assets-Inventories]/Current Liabilities
	L_3 Cash ratio	[Current Assets-Inventories-Accounts receivables]/Current Liabilities
Solvency	S_1 Solvency	Equity/Liabilities
	S_2 Debts over assets	Liabilities/[Liabilities+Equity]
Profitability	R_1 Net margin	EBIT/Revenue
	R_2 Net results	Net profit/Revenue
	R_3 ROA	EBIT/Total Assets

Table II. Factor loading Matrix (rotated)

Ratio	Comp1	Comp2	Comp3	Not explained
L1 Current ratio		0.615		0.051
L2 Quick ratio		0.615		0.051
L3 Cash ratio		0.464		0.326
S1 Solvency			-0.644	0.157
S2 Debts over assets			0.756	0.122
R1 Net margin	0.575			0.047
R2 Net results	0.564			0.099
R3 ROA	0.561			0.123

Table III. Segments of clubs based on economic, sporting, and social indicators for the period 2008-2019

Club	Average of the indicators	Turnover	Assets	Salary costs	Amortization	Followers in Twitter	LaLiga Championships	UEFA Champions League championships	UEFA Champions League number of participation
Real Madrid	32.6%	26.2%	22.1%	23.0%	21.6%	53.4%	25.0%	57.1%	24.0%
Barcelona	30.9%	23.3%	14.9%	22.3%	22.5%	23.8%	66.7%	42.9%	24.0%
Club Atlético de Madrid	7.9%	8.3%	15.0%	8.5%	8.1%	7.3%	8.3%	0.0%	16.0%
Big-3	**70.5%**	**57.8%**	**52.0%**	**53.8%**	**52.2%**	**84.4%**	**100.0%**	**100.0%**	**64.0%**
Valencia	5.2%	4.9%	10.9%	5.6%	5.9%	2.0%	0.0%	0.0%	12.0%
Sevilla	4.1%	4.5%	3.7%	5.4%	5.4%	1.5%	0.0%	0.0%	12.0%
Villarreal	2.9%	3.4%	4.8%	3.8%	4.3%	0.8%	0.0%	0.0%	6.0%
Athletic Club	2.3%	3.7%	3.2%	4.1%	3.7%	1.4%	0.0%	0.0%	2.0%
Big-4-to-7-medium	**14.4%**	**16.5%**	**22.7%**	**18.9%**	**19.3%**	**5.6%**	**0.0%**	**0.0%**	**32.0%**
Remainder-small	**15.1%**	**25.6%**	**25.4%**	**27.3%**	**28.5%**	**10.0%**	**0.0%**	**0.0%**	**4.0%**
TOTAL	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Source: Clubs Financial Statements, LaLiga, UEFA, and metricool.com that provides the followers in Twitter data

Table IV. Summary statistics

Variable	Observations	Mean	Std. dev.	Min	Max
L_1 Current ratio	203	0.78	0.79	0.11	9.28
L_2 Quick Ratio	203	0.77	0.78	0.11	9.28
L_3 Cash Ratio	203	0.31	0.42	0	3.28
S_1 Solvency	203	0.23	0.51	-0.78	3.08
S_2 Debt over assets	203	1.05	0.68	0.25	5.96
R_1 Net margin	203	0.06	0.39	-2.99	1.75
R_2Net results	203	0.03	0.35	-2.65	1.73
R_3 ROA	203	0.06	0.19	-1.05	1.16
Turnover (€m)	203	114.56	163.87	1.24	836.73
Transfer (€m)	203	15.98	24.13	-25.30	205.36
Assets (€m)	203	235.64	279.43	8.60	1,359.00
Salary cost (€m)	203	72.46	94.53	7.81	541.92
Amortization (€m)	203	23.08	30.87	0.20	159.87
FFP	203	0.54	0.44	0	1
Title (t-1|t-2)	203	0.19	0.39	0	1
UEFA competition	203	0.38	0.49	0	1

Table IV shows the number of observations, mean, standard deviation, minimum, and maximum of the variables used in our analysis.

Table V. Person pairwise correlations

	L_1 Current ratio	*L_2 Quick Ratio*	*L_3 Cash Ratio*	*S_1 Solvency*	*S_2 Debt over assets*	*R_1 Net margin*	*R_2 Net results*	*R_3 ROA*	*Turnover*	*Transfer*	*Assets*	*Salary costs*	*Amortiz.*	*FFP*	*Title (t-1|t-2)*
L_1 Current ratio															
L_2 Quick Ratio	0.9988*														
L_3 Cash Ratio	0.5340*	0.5337*													
S_1 Solvency	0.2291*	0.2212*	0.3370*												
S_2 Debt over assets	-0.0987	-0.0962	-0.0967	-0.6594*											
R_1 Net margin	-0.3156*	-0.3215*	0.1301	0.1428*	-0.0035										
R_2 Net results	-0.2077*	-0.2133*	0.1652*	0.1581*	-0.0157	0.9392*									
R_3 ROA	-0.0939	-0.1002	0.1604*	0.0665	0.1485*	0.8665*	0.8425*								
Turnover	-0.1153	-0.1112	0.0280	0.1434*	-0.1978*	0.0363	0.0235	-0.0189							
Transfer	-0.0033	-0.0031	0.1390*	0.1817*	-0.2295*	0.1335	0.0984	0.0617	0.4477*						
Assets	-0.1172	-0.1124	-0.0124	-0.1308	-0.2557*	0.0081	-0.0316	-0.0915	0.8926*	0.5265*					
Salary costs	-0.1200	-0.1158	0.0158	0.1284	-0.2033*	-0.0102	-0.0229	-0.0672	0.9790*	0.5398*	0.5398*				
Amortization	-0.1234	-0.1188	-0.0248	0.1363	-0.2408*	-0.0358	-0.0574	-0.1083	0.9507*	0.5234*	0.5234*	0.9317*			
FFP	0.0475	0.0456	0.2931*	0.3193*	-0.0762	0.2422*	0.2017*	0.2637*	0.1757*	0.2597*	0.2597*	0.1980*	0.0954		
Title (t-1|t-2)	-0.0997	-0.0959	-0.0989	0.1289	-0.1868*	0.0289	0.0036	-0.0328	0.6882*	0.3635*	0.6507*	0.6877*	0.6592*	0.0790	
UEFA competition	-0.0917	-0.0898	-0.0947	0.2886*	-0.3178*	0.0859	0.0574	0.0097	0.5816*	0.4043*	0.6389*	0.5810*	0.6220*	0.0700	0.5659*

Table V shows Pearson pairwise correlations between the variables used in our analysis. *p-value<0.05.

Table VI. FFP coefficient estimates for profitability financial dimension

		Whole sample		Big-3		Big-4-to-7-medium		Remainder-small	
		n=203		n=36		n=47		n=120	
C1 Profitability	FFP	1.0670	***	0.1608		0.7408		1.5886	***
		0.264		*0.181*		*0.547*		*0.446*	
	Size	-0.4531	***	0.0061		-0.4746		-0.8565	***
		0.157		*0.083*		*0.215*		*0.321*	
	ln(Transfers)	0.0424		0.0070	***	0.0281	***	0.0816	*
		0.290		*0.002*		*0.010*		*0.048*	
	Title (t-1|t-2)	0.4418		0.0918		0.2385			
		0.299		*0.107*		*0.230*			
	UEFA competition	1.1712	***			0.5793	*	1.5052	**
		0.390				*0.351*		*0.625*	
	constant	-1.6335	**	-0.2654		-0.9544	***	-2.9703	**
		0.702		*0.203*		*0.261*		*1.200*	
	Chi2	18.97		6.57		14.69		NA	
	p-value	*0.002*	***	*0.255*		*0.012*	**	*NA*	
	R2 overall	0.1640		0.1742		0.2638		0.2565	

Note. ***,**,* indicate significance at the 1%, 5%, 10% levels, respectively. Robust heteroskedastic standard errors below coefficient estimates.

Table VII. FFP coefficient estimates for liquidity financial dimension

		Whole sample	Big-3	Big-4-to-7-medium	Remainder-small
		n=203	n=36	n=47	n=120
C2 Liquidity	FFP	0.4566	0.0431	1.6604	0.2559
		0.458	*0.066*	*1.163*	*0.626*
	Size	-0.0488	0.1134	-0.3026	-0.1787
		0.090	*0.127*	*0.491*	*0.184*
	ln(Transfers)	0.0029	0.0122 ***	-0.0344 *	0.0153
		0.008	*0.001*	*0.020*	*0.014*
	Title (t-1|t-2)	0.0420	0.0163	0.4565	
		0.199	*0.064*	*0.459*	
	UEFA competition	-0.0456		-0.3425	0.3131
		0.188		*0.591*	*0.193*
	constant	-0.2528	-0.9575 ***	0.2006	-0.5232
		0.263	*0.280*	*0.172*	*0.530*
	Chi2	2.93	7.73	10.68	NA
	p-value	*0.710*	*0.102*	*0.058* *	*NA*
	R2 overall	0.0320	0.1995	0.2066	0.0154

Note. ***,**,* indicate significance at the 1%, 5%, 10% levels, respectively. Robust heteroskedastic standard errors below coefficient estimates.

Table VIII. FFP coefficient estimates for solvency financial dimension

		Whole sample		Big-3		Big-4-to-7-medium		Remainder-small	
		n=203		n=36		n=47		n=120	
C3 Solvency	FFP	0.2803		-0.0732		1.7754	***	-0.2532	
		0.435		*0.226*		*0.656*		*0.535*	
	Size	0.4693	**	0.3536	*	-0.5977	*	1.0368	***
		0.202		*0.196*		*0.320*		*0.271*	
	ln(Transfers)	0.0002		0.0159	** *	-0.0258	***	-0.0057	
		0.007		*0.001*		*0.008*		*0.015*	
	Title (t-1|t-2)	-0.1486		0.1142		0.4343	*		
		0.216		*0.081*		*0.246*			
	UEFA competition	-0.0262				0.1455		0.2732	
		0.287				*0.243*		*0.393*	
	constant	-0.0401		-1.0954		0.4134		1.2166	**
		0.290		*0.403*		*0.453*		*0.513*	
	Chi2	15.47		25.21		43.75		NA	
			**	*<0.00*	**		***		
	p-value	*0.008*	*	*1*	*	*<0.001*		*NA*	
	R2 overall	0.1551		0.4485		0.5162		0.2038	

Note. ***,**,* indicate significance at the 1%, 5%, 10% levels, respectively. Robust heteroskedastic standard errors below coefficient estimates.

Table IX. Gini index

Season	Turnover	Assets	Salary costs	Amortization
2008	0.4981	0.4817	0.4248	0.4806
2015	0.5490	0.5459	0.5230	0.6682
2019	0.5350	0.5558	0.5271	0.5934