University of Essex

EC831-6-: Project: Economics

An analysis of the relationship between financial inequality and competitive balance among football teams.

Business Economics (BA)

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A Project

In

Economics

Word Count: 5087

ABSTRACT

This paper analyses the relationship between financial inequality and competitive balance among football teams. During the last several years, there has been considerable changes in the football environment, including a rise in financial inequality and a dramatic shift in the competitive balance among football teams. After researching UEFA's financial fair play regulations, I discovered that there had been attempts to bring more competitive balance to football. Still, the remedies may not have worked as intended, reducing difficulties or shifting the problem elsewhere. To narrow the topic's scope, I concentrate on English football leagues. My objective for this study is to assess imbalances and remedies to get an analytical perspective on my topic, increase the reader's knowledge, and even assist football teams and regulators in comprehending the matter.

Contents

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1. Introduction

Since the research field's commencement, the relationship between competitive balance (referring to the rational expectations of fans regarding who will win), and revenue redistribution has been a popular topic in sports economics research (Stefan, 2002) (Peeters, 2009).

There has been an increase in fan interest in English league football, specifically in the Premier League, which has occurred when inequality has risen with income distribution, changing the competitive balance (Stefan, 2002).

English professional football consists of four leagues which compete in an open league format. A promotion and relegation system involves clubs moving between leagues depending on match performance. The English Premier League (EPL) is the highest tier which regulates itself. The English Football League (EFL) involves three separate tiers operating under a different structure (Daniel, et al., 2018).

This variation in organisational structures causes a divide between teams as revenue is not shared equally between the four leagues (Daniel, et al., 2018). Therefore, a substantial financial gap has opened between teams in the EPL and those in the EFL (Stefan, 2002). This financial gap is why I am reviewing this literature. This income gap could aid the top teams with player transfer fees, salaries, and facilities which can affect the competitive balance between teams. There are a significant number of studies on financial inequality and competitive balance throughout many nations. However, since this research focuses on English football, other nations will only be discussed occasionally.

The paper is structured in the following order: section 2 provides causes of imbalances and inequalities, focusing on the English Football Leagues. Section 3 focuses on remedies and policies. Finally, section 4 concludes this paper by discussing key points.

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2. Causes of imbalances and inequalities

.1 Match Attendance

We can start by examining the relationship between income distribution and competitive balance. (Vrooman, 1995, as cited in Stefan, 2002) (James Quirk, 1992 as cited in Stefan, 2002) argues that redistributive mechanisms such as gate sharing do not affect competitive balance. Gate sharing allows visiting teams to receive a percentage of the host team’s gate. If home teams are expected to earn more per match and be favourites to win, even though the visiting teams share part of the gate revenue, away teams would likely have less match success. In their view, when gate sharing is not implemented, both teams invest less in winning. Therefore, gate-sharing affects both teams equally, leaving the competitive balance unaltered (Stefan, 2002).

However, according to (Stefan, 2002), gate sharing affects competitive balance. This is because gate sharing reduces incentives for small market clubs to invest more than larger market clubs when the marginal cost of talent is constant. Still, income is strictly a convex function of playing performance. As a result, small clubs would benefit from the success of larger clubs more than they do from the success of smaller ones. However, a team's goals and the type of redistribution mechanism are used to influence the redistribution of competitive balance.

(Stefan, 2002) also suggests, growing wealth disparities undermine competitive balance, and competitive imbalance reduces attendance. Therefore, a natural experiment is used to investigate the relationship between unequal resource distribution, competitiveness, and fan interest.

The natural experiment compares identical division fixtures within the FA Cup and the football league to demonstrate the growing effects of inequality and competitive balance. Attendance is a significant aspect that determines financial imbalances, and attendance gate income is a large portion of how football teams generate money.

The FA Cup is a football competition available to all English-registered teams. Low-division teams compete early on, with top-division teams joining in later rounds. The natural experiment begins when matches are played against clubs from the same division, which occurs more frequently throughout the first two rounds. The balance of the entire tournament is the focus of the natural experiment. Within league competition, the competitive balance is measured by the variance of teams' win percentage over time or by teams' dominance of high ranks. In Cup competition, competition is examined by the success of teams from various divisions.

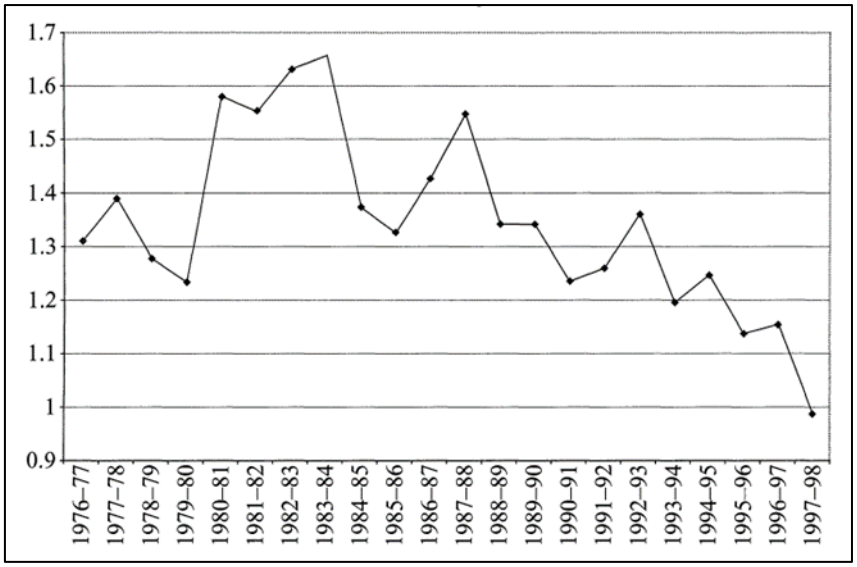

Figure. 1. FA/League Attendance Ratio. Graph from (Stefan, 2002).

(Stefan, 2002) uses a sample of approximately one thousand same-division FA Cup matches over 1976/7 to 1997/8. He compares FA Cup attendance to the attendance in the exact league match played in the same season. The natural experiment cannot account for every cause of difference between the two fixtures. Match attendance is influenced by several factors, including the day of the week, the form of the teams, and the point in the season when the match is played. Although income disparity between teams has increased, (Stefan, 2002) argues it's difficult to agree that competitive balance has decreased.

Evidence provided by (Stefan, 2002) suggests that an unbalanced contest has become even more so. The natural experiment shows that if the competitive balance in a tournament affects matches' attractiveness, match attendance will decline, where balance deteriorates faster. Since income inequality grows more quickly between clubs in the FA Cup competition, we should see a decline in match attendance.

Between 1977-1987 the average FA Cup fixture attracted an audience 43% larger than the equivalent league match; this declined to 25% in the second half of the data period and fell continuously until 1998. As inter-divisional income disparity was rising, the relative attractiveness of the FA Cup likewise saw a significant fall, and the FA Cup's competitive balance looks to have worsened.

However, the natural experiment has problems; other factors can alter the attractiveness of attending matches for Cup competitions and the league. For instance, price data from the annual Football Trust Digest of Football Statistics show no overall trend in the relative decline in FA Cup attendance.

The experiment found that the attractiveness of the FA Cup has remained strong, but the competition structure has enhanced the league's attractiveness. The natural experiment confirms the hypothesis about the impact of income inequality and competitive balance on the sport's attractiveness. (Stefan, 2002) concludes that while complete competitive balance due to fan interest could be better, market equilibrium (equally balanced contest) is unlikely to achieve the optimal distribution of resources.

.2 Club area size

Another reason behind the financial gap is the size of a club's area. (Vrooman, 1995) suggests that bigger city teams will be more successful than smaller city teams.

(Walker, 1986) examines the relationship between the success and city size in the case of English professional football teams, as well as city size and the demand for attendance at league fixtures. His hypothesis states that if success at any given level remains constant, clubs in larger cities will gain more attendees, giving teams further success with higher gate revenues.

As gate revenue increases, there is an improved chance for future success. It is important to note that attendance does not predict success. For example, the talent supply may be more significant in larger cities. Also, financial assistance from local businesses is more critical in larger cities. The sport's popularity and success disparities vary between equally sized cities. (Walker, 1986) uses a series of rank order (Spearman) correlations performed on data from five football seasons to test if successful teams are situated in more populated areas.

Population rankings were acquired from the (Department of Environment, 1971, as cited in Walker, 1986) and refer to Standard Metropolitan Labour Area (SMLA) rankings taken from 1971. SMLAs, which is defined by travel to work area tool, are perhaps a more accurate representation of the catchment or market area population for league football than formal city population. When there is one club in an SMLA population is shared equally when each club is in the same division. Whereas when clubs in the same SMLA are in different divisions, the population is spread according to the total attendance in each division during that season.

Season	League Standing and SMLA Rank (a)	League Standing and Population (or Population Share (b)
1968/69	0.4754	−0.7373
1969/70	0.4778	−0.7331
1970/71	0.5283	−0.7221
1971/72	0.5936	−0.7520
1972/73	0.6121	−0.7727

Figure. 2. Spearman Correlations Between League Standing and (a) SMLA Rank and (b) Population or Population Share. Table from (Walker, 1986).

The statistics in column (a) show a link between a club's league status and the level of the SMLA in which it is located. The statistics in column (b) reveal a large and robust negative relationship between league standing and population or population share. When we combine (a) and (b), we can observe that teams in significant population regions benefit more from league status.

(Walker, 1986) found that higher league positions were obtained by clubs in larger cities and that home league position is a significant factor in attendance; these findings make it clear that success leads to more success for big city teams. It is likely that big city teams also draw greater crowds when they travel because of the increased travelling fan support. (Walker, 1986) concludes his hypothesis that clubs located in larger population centres, which will generally have higher gate revenues, will be more successful. (Walker, 1986) concludes his hypothesis that clubs located in larger population centres, which will generally have higher gate revenues, will be more successful.

.3 Club League domination

Club league domination is fundamental in competitive inequality. (Jonathan Michie, 2004) examines the rise in inequality and 'domination' of top-flight clubs, which decreases competitive balance. He employs the Five-Club Concentration Ratio (C5) model. When applied to football, the Ratio uses a formula to measure the disparity between the top five clubs and the rest of the league.

The model's equation follows:

$$C5\ Ratio = \frac{Total\ points\ won\ by\ top\ five\ clubs}{Total\ number\ of\ points\ won\ by\ all\ clubs}$$

For a 20-team league such as the EPL, the C5 ratio lies between 0.25 and 0.55. Since the number of clubs is kept constant apart from when the size of the top tier changed.

(Jonathan Michie, 2004) uses the C5 ratio to measure the competitiveness of the premier league. He suggests it is easy to understand as the allocation of points is equal between clubs for a league, and the index equals 0.25 for a league with 20 clubs. From 1947-2004, the C5 ratio increased, and the most significant increase happened in the 1990s.

There was a 21% increase in the C5 between 1947-2004, although this included the change in the number of clubs in the league from 22 to 20. This would have affected the league's competitiveness; it is essential to consider these changes. (Jonathan Michie, 2004) finds that inequality within the top five clubs was constant until 1987. Afterwards, it began to rise significantly. He sees this by comparing years with an equal number of teams. The comparison revealed that between 1947 and 1987, the C5 ratio was constant. However, between 1989 and 2004, the index rose by 6.4%.

(Daniel, et al., 2018) utilises an adapted version of the Herfindahl Hirschman Index of competitive balance (HICB). This method is based on similar techniques, such as the C5 concentration method used by (Jonathan Michie, 2004).

(Daniel, et al., 2018) uses the approach to examine the competitive balance between the clubs in the EPL and EFL rather than just the top five, as demonstrated by the C5 concentration method.

(Daniel, et al. 2018) computes HICB scores using the formula $\left(\frac{HHI}{\frac{1}{n}}\right) * 100$, where HHI is the sum of the squares (a statistical measure of variance from the mean) of the points shares for each club competing in a league in each season, and N is the total number of clubs in that league and season. Any size fully balanced league will have an index value of 100.

(Daniel et al., 2018) displays the HICB scores for the English Premier League and the three divisions of the English Football League in each completed season between 1992/1993 and 2015/2016. The EPL's competitive balance has deteriorated significantly, with a 10% difference between the most and least competitive ratings.

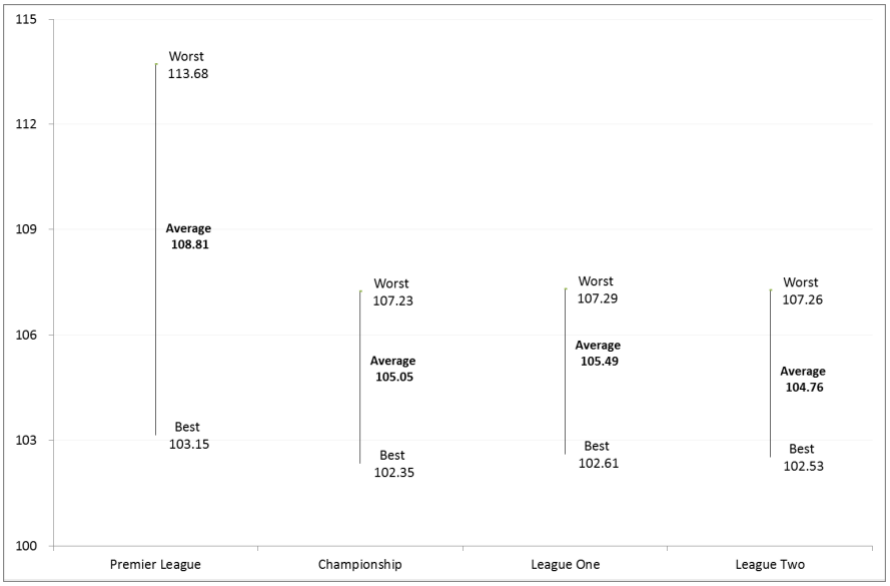

Figure 3. Best, worst and average HICB by league. Graph from (Daniel, et al., 2018).

Figure 3 depicts the range of the HICB score for each league, revealing three key points: more significant variation in competitive balance in the EPL; only marginal variations in the best, worst, and average (mean) HICB scores between these leagues; and the least balanced season in each division has a HICB score of 107. The HICB data revealed a declining trend in overall competitive balance in the EPL over 24 seasons. The EFL appeared more balanced than the EPL (Daniel, et al., 2018).

.4 Political impacts

Before the Bosman ruling, there was a rule that a player's licence was registered with the club he last played at, and if two clubs couldn't reach a mutual agreement on a transfer fee, they would disallow a transfer to a new club. Bosman brought the case to court and the judgement was delivered in 1995 (Cretton, 2015) (ANTONIONI & CUBBIN, 2000). However, after the ruling, players can freely choose their employer and play for any European team.

(Schmidt, 2007) states that in 1993, the European Commission directorate general published a report highlighting the EU's influence on football. The Bosman case surprised the acting people in football. However, EU law and previous issues indicated that this ruling is possible. EU law resulted in affecting sports directly and indirectly.

The EU is concerned about the free movement of players. One of the goals was to adjust player transfer fees to a lower level so that they would cover players' training and development but not a club's business activities. A five-year transition time was asked to be

set up by the court, but this was rejected. Thus, the consequences of the ruling had to be dealt with immediately.

The ruling of the European Court was that players who are out of contract should be treated as all other employees in the EC, and clubs should not pay a transfer fee on a completed contract. In the club's decision model, this is like setting the terminal payoff to zero. As this is constant, it does not depend on a club's expectations of its value and investments in the club. Therefore, the Bellman equation for T-1:

$$F_{T-1}(V_{T-1}) = \max_{I_{T-1}}\{U(V_{T-1}, I_{T-1}) + 0\}$$

The expected present value of any investment by the club is now reduced since Bellman's principle of optimality; the continuation value of the contract is lessened for any prior period. Thus, the Bellman equation at T-2 is unchanged:

$$F_{T-2}(V_{T-2}) = \max_{I_{T-2}}\{U(V_{T-2}, I_{T-2}) + \left(\frac{1}{1} + p\right) E_{T-2}\left[F_{t-1}(V_{t-1})\right]\}$$

The Bosman ruling would decrease a club's investment in players to the game's detriment. However, the club has more than one decision of how much to invest in a player; it can also decide to stop investing under the current terms of the contract. The Bosman ruling has not addressed this aspect. Furthermore, the ruling has not changed the concept of a transfer fee, which is payable to a player whose contract has not expired.

Several people in the football industry suggested that transfer fees would no longer be payable under any circumstances after the ruling. However, most transfers always affect in-contract players, and there has been little evidence that the transfer fees have decreased. Thus, clubs will act to maximise the expected present value of the stream of utility gained from a player's contract. If the payoff to selling the player is greater than the utility gained from the player, the club will likely sell the player and take the termination payoff.

After the Bosman ruling, according to (Schmidt, 2007), there have been repercussions, clubs now have little control over their players, and successful players will be attracted to the best clubs. Furthermore, teams with larger budgets would have an easier time controlling their league.

3. Remedies/Policies to restore balance

.4.1 Revenue redistribution

It is critical to address revenue distribution because equal revenue distribution should keep the team's finances in balance and ensure a boost in competitive balance.

(Anderson, 2013) an essential topic among football fans is revenue distribution from selling TV rights. However, there are variables controlling how much revenue a team earns. Within the EPL, 25% of TV income is distributed based on league standings, 50% is allocated equally, and the final 25% is awarded for the number of TV appearances (Stefan, 2002).

(Anderson, 2013) states that an individual selling arrangement is where each club negotiates their TV rights fees; the demand for a club's fixtures will dictate the price the club can command. For instance, Spain uses an individual selling method; Barcelona and Real Madrid, the two biggest clubs, control approximately 70% of the fan base. These clubs will demand sums much greater than others, giving them an advantage. Realistically this created a two-tier league as other teams cannot compete against the most prominent teams, so they fight for third place.

Matchday figures between Real Madrid, Barcelona and Manchester United are similar. However, there is a £50m difference between TV revenues. This shows the power of individual selling in an environment where competitive advantages exist.

When comparing English clubs to other European nations, it is evident that the collective broadcasting deal has enhanced their wealth. (Anderson, 2013) suggested that the best example of collective selling is from England, where clubs in first and twentieth position had a 36% difference in TV income. The EPL TV income split follows:

How the Premier League's TV income was split between the 20 clubs in 2011-12

Position	Club		Equal share of PL domestic £	Facility fees	Merit payment	Overseas TV	TOTAL
1	Man City		£13,788,093	£12,948,312	£15,101,240	£18,764,644	**£60,602,289**
2	Man Utd		£13,788,093	£13,426,422	£14,346,178	£18,764,644	**£60,325,337**
3	Arsenal		£13,788,093	£10,079,652	£13,591,116	£18,764,644	**£56,223,505**
4	Tottenham		£13,788,093	£11,992,092	£12,836,054	£18,764,644	**£57,380,883**
5	Newcastle		£13,788,093	£9,601,542	£12,080,992	£18,764,644	**£54,235,271**
6	Chelsea		£13,788,093	£10,557,762	£11,325,930	£18,764,644	**£54,436,429**
7	Everton		£13,788,093	£5,776,662	£10,570,868	£18,764,644	**£48,900,267**
8	Liverpool		£13,788,093	£11,992,092	£9,815,806	£18,764,644	**£54,360,635**
9	Fulham		£13,788,093	£5,776,662	£9,060,744	£18,764,644	**£47,390,143**
10	West Brom		£13,788,093	£5,776,662	£8,305,682	£18,764,644	**£46,635,081**
11	Swansea		£13,788,093	£5,776,662	£7,550,620	£18,764,644	**£45,880,019**
12	Norwich		£13,788,093	£6,254,772	£6,795,558	£18,764,644	**£45,603,067**
13	Sunderland		£13,788,093	£5,776,662	£6,040,496	£18,764,644	**£44,369,895**
14	Stoke		£13,788,093	£5,776,662	£5,285,434	£18,764,644	**£43,614,833**
15	Wigan		£13,788,093	£5,776,662	£4,530,372	£18,764,644	**£42,859,771**
16	Aston Villa		£13,788,093	£5,776,662	£3,775,310	£18,764,644	**£42,104,709**
17	QPR		£13,788,093	£7,689,102	£3,020,248	£18,764,644	**£43,262,087**
18	Bolton		£13,788,093	£5,776,662	£2,265,186	£18,764,644	**£40,594,585**
19	Blackburn		£13,788,093	£6,254,772	£1,510,124	£18,764,644	**£40,317,633**
20	Wolves		£13,788,093	£5,776,662	£755,062	£18,764,644	**£39,084,461**

Figure 4. How the Premier League's TV income was split between the 20 clubs in 2011-12. Table from (Harris, 2012, as cited in Anderson, 2013)

Furthermore, (Anderson, 2013) addresses that the EPL is feasibly Europe's most watched league. This vast viewership increases overall revenue, allowing EPL teams to invest extensively in their players. The lowest ranked team earns £40m while the highest earns £60m. This revenue allocation should improve competitive balance (Anderson, 2013) (Harris, 2012). Additionally, (Stefan, 2002) suggests that TV revenue distribution based on league rankings will improve competitive balance by giving smaller clubs equal access to the TV market. However, it is argued that the Champions League and revenue from foreign owners override competitive balance.

The equal distribution approach combats the problems brought on by other factors. TV rights, allegedly, impact competitive balance less than foreign ownership and Champions League money, even though England's competitive balance is deteriorating. Although it somewhat disguises the impacts of the other contributing elements enhancing competitive balance, TV rights in England may be considered as a solution for the competitive balance. Spain, on the other hand, has seen less of an influence from Champions League money since they have fewer foreign owners and a declining competitiveness. Therefore, the individual sale of TV rights will significantly impact the league.

(Peeters, 2009) suggests that we should demand that any rise in the total value of future broadcasting rights should be split evenly among the 20 teams to avoid income from television broadcasting from worsening the financial imbalance. All clubs would therefore be better off due to the equal share of increasing money, while trailing clubs would raise their share of the overall revenue. Even income distribution lowers risk and stabilises the league.

Clubs' business and financial administration must be improved in addition to this step to maximise its impact. Without this, there is a risk that redistributing money would be used to finance bad management strategies rather than provide the groundwork for improved financial and athletic performance.

UEFA can change its redistribution regulations to ensure that a higher share of future broadcast contract revenue goes to National Associations and leagues for member teams not taking part in the Champions League. This will enhance the competitive balance among national leagues, decreasing the likelihood of a separate European Super League. This is true for the requirement to encourage advancements in lagging clubs' governance procedures. This might be carried out as an expansion of UEFA's licencing effort (Peeters, 2009).

.4.2 Business Strategy

Talking about business strategies is crucial because they can improve competitive balance by allowing smaller teams to utilise them to close the financial gap and level the playing field. We can do this by looking into profit-maximising and winning-maximisation strategies.

If clubs aim for profit maximisation, they redistribute income based on playing success. Under win maximisation, clubs' surplus income is reinvested in players (Stefan, 2002).

(Garcia-del-Barro & Szymanski, 2006) Identifies the league position clubs would achieve had they chosen either win or profit maximisation strategies using fixed estimates. This is calculated using fixed estimates of league position and wage costs. Teams, however, sometimes need better luck because of player injuries. Thus, they concentrate on each team's average best performance over the sample period and contrast it with the average league position attained.

Moreover, short-run optimal responses are considered by (Garcia-del-Barro & Szymanski, 2006). However, problems may arise if an equilibrium solution is considered since the steady state's derivation may not adhere to the limits on adding up constraints and cannot be an equilibrium. Therefore, the optimal replies do not necessarily correspond to the adding-up restriction in the short-run model.

English League Average 1993–2004	(1) Real Position	(2) Max Wins	(3) Max Profit	Spanish LFP Average 1994–2005	(4) Real Position	(5) Max Wins	(6) Max Profit
Manchester United	2	5	23	Real Madrid	3	6	17
Arsenal	3	9	29	Barcelona	3	5	15
Liverpool	4	11	33	Valencia	5	6	18
Chelsea	6	9	30	Celta	7	6	18
Newcastle United	7	8	29	Deportivo La coruña	8	9	21
Aston Villa	8	12	33	Athletic de Bilbao	8	10	24
Leeds United	8	12	34	Valladolid	10	12	26
TottenhamHotspur	11	12	33	Real Sociedad	10	10	24
West Ham United	12	14	35	Mallorca	10	12	26
Southampton	13	14	35	Málaga	10	13	27
Blackburn Rovers	13	19	38	Bétis	11	8	21
Everton	14	16	36	Alavés	12	14	28
Fulham	14	20	39	Español	12	12	26
Leicester City	14	14	35	Atletico de Madrid	13	12	25
Middlesbrough	15	17	37	Zaragoza	14	15	29
Wimbledon	15	15	36	Oviedo	16	15	29
Sunderland	20	14	35	Racing de Santander	16	18	32
Bolton Wanderers	20	14	35	Sevilla	17	16	30
Charlton Athletic	20	16	37	Rayo Vallecano	19	15	30
Coventry City	21	19	38	Villarreal	19	16	30
Derby County	21	20	39	Tenerife	21	18	32
Manchester City	22	18	37	Recreativo de Huelva	22	22	34
Ipswich Town	22	18	37	Sporting de Gijón	23	23	35
Sheffield Wednesday	22	19	38	Las Palmas	24	18	32
Birmingham City	22	19	39	Salamanca	24	24	36
Nottingham Forest	23	20	39	Getafe	27	30	38
Crystal Palace	25	18	38	Compostela	27	25	37
Wolverhampton Wander	27	18	37	Numancia	27	25	36
Barnsley	27	20	39	Albacete	28	25	37
Bradford City	28	19	38	Levante	28	22	35
Sheffield United	29	22	40	Lleida	31	30	39
Norwich City	30	20	39	Logroñés	34	31	39
Queen's Park Rangers	30	26	41	Leganés	34	27	38
West Bromwich Albion	30	15	36	Córdoba	35	31	39
Preston North End	32	23	40	Murcia	35	25	37
Watford	32	24	40	Hercules	41	37	41

Figure 5. Profit maximising and winning maximising in soccer leagues. Table from (Garcia-del-Barro & Szymanski, 2006).

Based on the results gathered, teams in the Spanish and English divisions are approaching their win-maximizing positions. Furthermore, both assumptions hold regarding the relative ranking of teams since we can observe a strong correlation between real placements.

Table 6 Deviations from the profit-maximizing and win-maximizing position

Variable	Spanish LFP (unbalanced)			English leagues (unbalanced)		
	N	Mean	Sum	N	Mean	Sum
$(p^* - p)$	189	12.12		392	15.55	
$(\hat{p} - p)$	189	−0.48		392	−3.61	
$((p^* - p)^2)/N$	189		190.62	392		368.75
$((\hat{p} - p)^2)/N$	189		39.11	392		140.47

$(p^* - p)$ is the difference between the profit-maximizing position and the real one
$(\hat{p} - p)$ subtracts the actual position from the win-maximizing (or zero-profit) position

Figure 6. Deviations from the profit-maximizing and win-maximizing position. Table from (Garcia-del-Barro & Szymanski, 2006)

Spanish clubs averaged 12 places over their profit-maximising position across the sample period, but only around half a place below their win-maximizing position. On the other hand, English teams were approximately four places below their win-maximizing position but about 16 places above their profit-maximising position. (Garcia-del-Barro & Szymanski, 2006) concludes that profit-maximising clubs will likely be relegated, causing a decline in future profits. Clubs will favour winning maximisation strategies for a dominant league position.

(Dobson, 2001) also investigates club strategy. He uses an open model where labour market conditions for players are open. This allows clubs outside the domestic league to transfer players freely and enables them to grow their pool of playing potential without decreasing the pool owned by the opposing team. However, it becomes harder for wealthier clubs to use their spending power to aim for league dominance by monopolising the best of a limited talent pool.

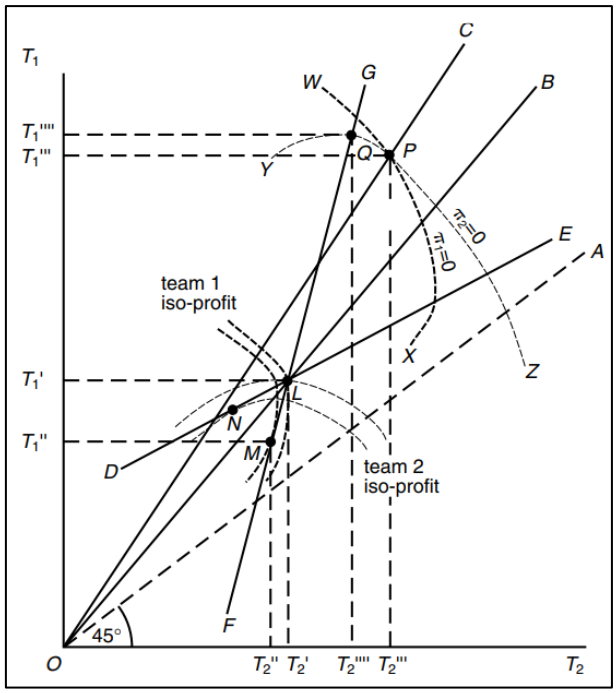

Figure 7. Competitive balance under profit and revenue maximising assumptions, open model. Graph from (Dobson, 2001).

Teams 1 (T1) and 2's (T2) entire sets of iso-profit curves are displayed in this graph from (Dobson, 2001). The highest profit that teams may achieve is shown by T1s reaction function, DE, and T2s, FG. For T1T2, OA displays all balancing points that are perfectly competitive. The Cournot-Nash equilibrium is located at point L, where the two response functions intersect under profit maximisation assumptions. The profit at points M and L is

higher for T1 if T1 is aware of T2's actions and reacts accordingly. Therefore, when bigger teams act strategically, competition is more balanced than at the Cournot-Nash equilibrium.

Furthermore, (Dobson, 2001) asserts that, according to the open model, competition should be more balanced if teams seek profit-maximising objectives rather than regular ones, subject to budgetary constraints. (Dobson, 2001) Concludes that teams looking to profit maximise will create competitive balance by spending less on players. If clubs aim for revenue maximisation, competition needs to be more balanced, the deciding factor being the amount of expenditure they can use on talent. In either case, bigger clubs' strategic behaviour will likely strengthen his hypothesis.

.4.3 UEFA regulation

In 2011 UEFA's FFA regulations were implemented with two objectives. Firstly, to introduce discipline to club finances to help protect the stability of European football. Secondly, the regulations would help the industry become more competitively balanced (UEFA, 2018).

(Sass, 2016) examines winning maximising clubs and critiques the long-term consequences on competitive balance following the introduction of the Union of European Football Associations (UEFA) Financial Fair Play (FFP) regulations, involving break-even constraints. Clubs risk exclusion from UEFA's international competitions if they do not 'break even' during the allowed 3-year period.

An infinite time horizon and a discrete time scale are assumed, with each period representing a single league season. Clubs again differ only concerning market size, but market size is no longer exogenous but instead assumed to be positively dependent on a club's historical success. This idea is motivated by the glory hunter phenomenon among sports fans, where fans associate themselves with winning teams with no prior club support. Unfortunately, this also works in the opposite direction (Sass, 2016).

(Sass, 2016) to model the endogeneity of market size, a recursive symmetric market size function is considered, which assumes market size of club i in season t to be dependent on the winning percentage in season t 1:

$$\mathrm{m}_\mathrm{i}^\mathrm{t} = \mathrm{m}_\mathrm{i}^\mathrm{t}(\mathrm{w}_\mathrm{i}^{\mathrm{t}-1}) \text{ with } \mathrm{m}_\mathrm{i} + \mathrm{m}_\mathrm{j} = 1$$

Club i's revenue R in season t is hence given by:

$$\mathrm{R}_\mathrm{i}^\mathrm{t}\left[\mathrm{w}_\mathrm{i}^\mathrm{t}, \mathrm{m}_\mathrm{i}^\mathrm{t}\left(\mathrm{w}_\mathrm{i}^{\mathrm{t}-1}\right), \beta\right] = \mathrm{m}_\mathrm{i}^\mathrm{t}\left(\mathrm{w}_\mathrm{i}^{\mathrm{t}-1}\right)\mathrm{w}_\mathrm{i}^\mathrm{t} - \frac{\mathrm{m}_\mathrm{i}^\mathrm{t}\left(\mathrm{w}_\mathrm{i}^{\mathrm{t}-1}\right)}{\beta}\mathrm{w}_\mathrm{i}^{\mathrm{t}2}$$

The revenue function is the same as the single-period model's revenue function. In each season, perfectly divisible units of playing talent are available on the players' labour market at constant marginal costs $c > 0$.

Clubs are assumed to maximise winning percentage under a seasonal break-even constraint imposed by the new UEFA Financial Fair Play Regulations. Clubs must spend their entire seasonal revenue on player salaries to break even. Winning percentages in equilibrium in season t are calculated the same way as in the single-period model. Competitive balance solely depends on the now endogenous market sizes in t and the exogenous β.

$$w_i^t * = \frac{\beta(m_i^t - m_j^t) + m_j^t}{m_i^t + m_j^t}$$

All the comparative statics derived from the single-period model from (Sass, 2016) also hold for the multiperiod version of the model. For example, assume now a market size function with the following properties:

$$\frac{d^2 m_i^t}{dw_i^{t-1^2}} = 0 \text{ for}$$

To get reasonable equilibrium solutions, market size at any point in time should neither exceed m_i^{max} nor go below m_i^{min}. For convenience, it is assumed that $m_i^t = m_i^{min}$ for $w_i^{t-1} \leq w_i^{min}$ and $m_i^t = m_i^{max}$ for $w_i^{t-1} \geq w_i^{max}$.

Between w_i^{min} and w_i^{max}, market size increases. For $\frac{1}{2} < w_i^{t-1} < w_i^{max}$, the market size function is concave, so the marginal effect on market size decreases as it becomes increasingly difficult for the club to attract new spectators. From symmetry, it follows that $m_i^t\left(\frac{1}{2}\right) = \frac{1}{2}$. Here are the properties of the market size function:

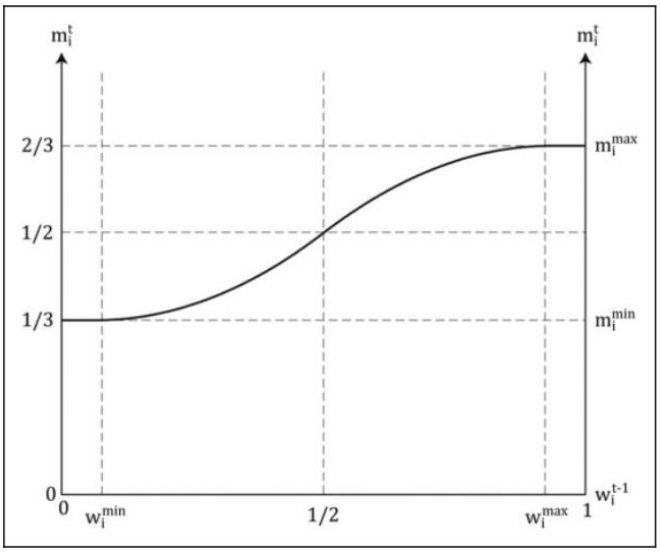

Figure 8. Properties of the market size function

There are two possible long-term equilibria the first equation: $w_1^* = w_2^* = \mathrm{m}_1^* = \mathrm{m}_2^* = \frac{1}{2}$ represents a long-term equilibrium, and that any shock to either market size or winning percentage will lead to a convergence that leads to the steady-state equilibrium represented by:

$$\begin{aligned} w_1^* &= w_i^{max} \\ w_2^* &= w_i^{min} \\ m_1^* &= m_i^{max} \\ m_2^* &= m_i^{min} \end{aligned}$$

The justification for this is that more successful clubs in t draw larger attendances in $t+1$, creating a larger market size. This increases clubs' revenue and gives a higher budget for talent, increasing win percentage in $t+1$ compared to t, further expanding the market size in $t+2$. However, market size growth slows down until the steady-state equilibrium is attained (Sass, 2016).

(Plumley, et al., 2018) suggested that UEFA had good intentions with FFP. However, (Sass, 2016) concludes that the model predicts that big clubs will become bigger and bigger over time, dominating smaller clubs in the long-term equilibrium. UEFA's Financial Fair Play has caused an uneven competitive balance in the long run, where big clubs dominate small clubs. The effect is problematic as it addresses the negative impacts of foreign club owners and eliminates the positive effects of increasing or maintaining competitive balance. This is due to the break-even constraint, which prevents small clubs from overspending or investing in a greater market size for the future.

(Sass, 2016) finds that small clubs constrained by break-even requirements must spend their money wisely and invest in a larger market size for the future. Resulting in an unequal competitive balance in which big clubs utterly dominate small clubs.

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4. **Discussion and Conclusion**

Football is plagued with financial inequity, according to my research. This damages the competitive balance between teams who are less wealthy. It is challenging to pinpoint a single cause for financial disparity since it stems from many distinct sources. The topics we addressed varied greatly from one another; for example, club size is extremely different from political implications. Nonetheless, a club's size correlates with attendance since more populated areas will have larger attendances, generating more income. A significant imbalance may be caused by specific teams being more popular than others. In my opinion, since there are many sources of inequalities, it is difficult for smaller teams to bridge the financial gap against the bigger teams. The majority of these sources are outside the control of football clubs such as the Bosman ruling, and inequalities must be addressed by the game’s governance.

While there has been remedies put in place to address the balance such as FFP, it is clear they have yet to make significant changes as so far, they have only seemed to mitigate them instead of increasing competitive balance. Although we have talked about clubs' business strategies, it seems as though clubs have little control over remedies to restore balance. In my opinion, a club that is falling behind without a lot of revenue cannot prioritise the dominant strategy of winning maximisation to close the gap; instead, they must put profit maximisation first because they might not have enough revenue to maximise winning.

Generally, it is clear that the competitive balance is negatively impacted by financial inequality. Although many football clubs experience difficulties, football governance must make important changes to solve them; yet, certain factors, including the size of the club's playing area and a team's popularity, are outside its control. However, fans may prefer less competitive balance because it may make football games more interesting, especially when a smaller club pulls off an upset by defeating a dominant club. However, a significant gap, as we have seen from evidence, hurts fan’s interest.

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