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The impact of Financial Fair Play on the Competitive Balance in European Football Leagues

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The paper conducts an analysis to test the impact of the Financial Fair Play (FFP) regulation introduced by the UEFA in 2010 on the competitive balance in the European football industry. I first give background information on the importance of competitive balance (CB) in sports and the theoretical impact of FFP. The empirical analysis based on 24 European countries gives evidence of a slight negative impact on the CB due to the enforcement of the FFP in 2011/12. This leads to the conclusion of an emerging league hierarchy within each country and potential antitrust issues concerning UEFA as the governing body of the European football market.

Key Words: Financial Fair Play, Competitive Balance, European Football Industry

1   Introduction

Professional football leagues across Europe attract not only vast numbers of fans and spectators but create also exceptional large revenues (Collignon et al., 2011). In recent years, revenues increase consistently leading to new spheres of transfer fees and player salaries, for example the highest transfer fee of Neymar Jr. from FC Barcelona to Paris Saint-Germain for EUR 222 million in summer 2017 associated with the highest salary of EUR 36 million (Burton, 2017). Large-revenue clubs entice players with attractive salary packages to create the best team for winning national and international trophies. Smaller clubs overreach their intrinsic spending capabilities to compete with big clubs resulting in indebtedness or covering payables with external finance from benefactors.

Besides the reason of individual sporting success for clubs, leagues need to provide a balanced contest that is more interesting for spectators. This joint product selling is the peculiarity of sports economics as a certain level of competitive balance (CB) is necessary. Such CB can be broadly defined as the outcome uncertainty of games meaning that both teams have equal chances of winning the match. This can be further elaborated to the seasonal and championship outcome uncertainty (Rottenberg, 1956).

Although, all clubs experience a revenue boost, they concurrently increase their liabilities to gain financial advantage over the other teams. This financial cut-out circle led to insolvencies throughout European football clubs and stimulates to determine mandatory countermeasures to improve financial performance. Therefore, UEFA, as the governing body of European football, initiated the financial fair play (FFP) regulation in 2010/11 to return 'discipline, rationality and sustainability' to the spending behavior of European football clubs. The policy aims several objectives with the focus on the no overdue payables and the break-even requirement to protect the long-term viability of football clubs (see Art. 2(2)) (UEFA, 2015). The FFP regulation causes a reduction in spending abilities as football

clubs are obliged to operate within their means of football related revenues. Consequently, a decline in transfer fees, player and agent wages is notable as well as increasing profits for clubs according to academic literature (Preuss et al., 2012; Sass, 2012; Madden, 2014; Peeters and Szymanski, 2014). This constraint of interests leads to a legal challenge by the player agent Daniel Striani of the FFP in front of the European Commission as it limits competition in the football industry. However, such individual constraints are tolerated as long as the CB of the league maintains in favor of the benefits for spectators (Bastianon, 2015). Thus, limiting individual benefits with the FFP is allowed as long as it improves the sporting contest.

Therefore, the purpose of this paper is to compare the competitive balance before and after the implementation of the FFP regulation by the UEFA across European football leagues. I use a data sample of 24 European countries covering the first and second division for men to examine the impact. The sample period is from 2003/04 to 2016/17 with the official introduction of FFP in season 2010/11. The contribution of this paper is the empirical analysis with a unique and self-collected data sample that sheds new light on the impact of FFP on CB with applying the Difference-in-Difference (DiD), triple-Difference (DDD) and t-Test estimators.

The findings indicate a slight decrease in seasonal CB after the enforcement of the FFP in 2011/12 without statistical significance. I add a variable for the accumulated Champions League revenue of a league as the prize money is a major financial advantage after the abolishment of external benefactors. The model shows that the CB in first divisions after the enforcement of FFP in 2011/12 decreases with increasing Champions League revenue. The championship CB for the top 3 ranking declines, however not statistically significant after FFP. The number of champions of first divisions decreases significantly after the FFP with an even more decreasing trend in later years. The results give evidence that FFP has a negative impact on the seasonal and championship CB. Although, these results show negative biased competition due to FFP, the legal actions by Striani and Dupont against FFP and

UEFA were rejected in 2015 (Bastianon, 2015).

The paper is structured into six sections. Section two provides an overview of academic literature as well as a framework of CB and FFP. The following section gives insights on the data sample, the adjustments required to answer the research question, and provides the first descriptive results. Then, I present the methodology and the results of the analysis of seasonal and championship CB. The next section contains a critical review of my analysis and results. The final section presents the conclusion of the study.

2 Theory

2.1 Football Background

In the last two decades revenues increased from EUR 2.8 billion in 1996 to EUR 18.5 billion in 2016 with an average increase of nearly 10% p.a. in the European football industry. The overall attendance of fans per season increased over time but only at a low percentage and for some countries it even decreased in the same time period (UEFA, 2016). As the revenues shift to new scopes, also a dramatic increase of transfer fees and player wages appeared. The large impact of broadcast rights, prize money from Champions League and UEFA Europa League participation as well as financial injections from benefactors strengthen the financial abilities of the incumbent and wealthy clubs (UEFA, 2016). On the other hand, not all clubs benefit from the new trend leading to financial differences of three major circumstances.

Firstly, the most striking development is the revenue gap between European football leagues. Comparing the English Premier League (EPL) (biggest league in Europe by revenue) with a revenue in 2016 of EUR 4.406 million and the Jupiler League in Belgium (10th largest in Europe by revenue)

having a revenue of EUR 316 million in 2016, demonstrates the steep incline in revenues between the European leagues. Particularly, the EPL revenue in 2016 is larger than the aggregated revenue of all European professional leagues excluding Germany, Spain, Italy and France. Thus, 48 professional leagues combining 597 clubs generate less revenue than the largest in Europe (UEFA, 2016).

Secondly, the revenue differences within European football leagues are also significant. In the English Premier League 2016, Manchester United had a revenue of EUR 581 million compared to AFC Bournemouth with around EUR 100 million (UEFA, 2016) [1]. Similar differences or even bigger ones occur in the other 'big five'[2] leagues but also in non-prestigious leagues.

Thirdly, in all national European football associations several divisions exist and every season teams get relegated and promoted. The revenue difference is even greater when comparing across divisions within a national football association. Thus, the disparity is greater between clubs in the first division and clubs in the second division. The revenue of the second division in England (Championship) is approximately EUR 620 million. Hence, the clubs in the Championship manage to collect only EUR 40 million more in total revenue than Manchester United alone (Barnard et al., 2017). This shows, that based on revenue in all three dimensions a huge disparity in financial capability is present.

Besides the national football competitions, UEFA organizes the prestigious UEFA Champions League and the UEFA Europa League. In both tournaments, the best clubs from European countries compete against each other, to be the best club in Europe and gain substantial prize money. Hence, clubs lure the most talented players with superior salaries and transfer fees to compete national and supranational for additional revenues and sporting success.

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[1]For the English clubs not operating in Euros, the fluctuation of British Pounds can affect the financial data. Still, the overall trend is not affected by the exchange rate.

[2]In European Football five leagues emerge with the English Premier League (England), German Bundesliga (Germany), La Liga (Spain), Seria A (Italy) and, Ligue 1 (France).

Nevertheless, financially big clubs compete for the talented players and sometimes overreach their financial abilities. Further, small clubs are trying to compete for talented players with large clubs and most likely spend more than their budget. For example, Manchester United records a net debt of EUR 535 million in 2015 compared to revenues of EUR 581 million. Concurrently, Queens Park Rangers records a net debt of EUR 279 million in 2015 which is 2.5 multiple of its revenue (UEFA, 2015a). This results most commonly in extensive debts and liabilities against private and public creditors. Despite the gain in revenues, many European football clubs experience financial difficulties because of long term overspending in expectation of sporting success and prize money. Often, this expenditure strategy results in minor or fundamental net losses. This consistent budget deficit is most often the result of transfer spending and high wages for talented players (Preuss et al., 2012).

Consequently, to stay competitive some clubs finance their spending behavior by increasing debts taking the risk of bankruptcy. Other football clubs are owned by wealthy individuals or consortia which support the clubs with private financial injections to avoid bankruptcy. Thus, these clubs are financially stronger and therefore can attract more player talent.

2.2   Competitive Balance in Football

Rottenberg (1956) describes competitive balance as the uncertainty of the sporting outcome. He differentiates between three levels of outcome uncertainty, particularly, the match uncertainty (1), seasonal uncertainty (2) and championship uncertainty (3). At each competition level, the more balanced the teams are in comparison, the higher is the outcome uncertainty and therefore the unpredictability of the results. In perfectly balanced leagues, the winning chances of a match is even for all teams, hence each team would have an equal chance to win the title and the outcome uncertainty is maximized. The origin of outcome uncertainty is the match uncertainty, which results in seasonal

uncertainty and in the long run the championship uncertainty over several years (Goossens, 2006).

Competitive Balance is an issue concerning especially fans and clubs. Equal sporting abilities of clubs increases the interest of spectators in the stadium and the TV audiences. A high level of CB means a high outcome uncertainty and thus, the predictability is low and the game does not suffer of boredom. Also, the peculiarity of sports is the selling of a joint product, the competition. Based on Humphreys and Miceli (2016) audiences prefer matches with an uncertain outcome even if club preferences exist. Having dominating teams in a league with a likelihood to win each game lowers the CB substantially. Hence, these clubs reduce the audience's attention because of a predictable outcome leading to lower gate revenues and TV broadcast revenues. Further, an extensive competitive imbalance risks the league system as inferior teams generate less revenue in the long run and therefore, face bankruptcy (Michie and Oughton, 2004).

Another important aspect is the legal ground for the UEFA for not being examined in antitrust issues. UEFA faces no competence restraint as long as it preserves competition in the football industry. Danial Striani, a player manager, induced legal action against the UEFA after the implementation of the FFP as an anti-competitive regulation for players and their agents. Therefore, the results of the analysis presents evidence if there is legal ground to challenge the FFP regulation as an anti-competitive policy due to an reduction effect on the seasonal and championship CB.

2.3 Financial Fair Play Regulation

UEFA introduced on 1 June 2010 the Financial Fair Play regulation as a succession and additive of the UEFA Club Licensing from 1999 to overcome the debt as well as the wealthy benefactor phenomenon and to bring back 'discipline, rationality and sustainability' into the European football market (UEFA, 2015).

The UEFA introduced in 1999 the Club Licensing framework as a regulating policy to participate in the UEFA tournaments. Initially, the objective of the licensing system was to introduce a salary cap for players which was never realized because of a missing legal framework (UEFA, 2015). Further, the licensing system introduced targets concerning youth development, sports related infrastructure, administration, legal and financial matters of clubs. The financial auditing regarding no overdue payables against players and other clubs was implemented in the season 2004/05. The FFP regulation introduced in 2010 builds on this regulatory system.

The policy aims to assure football clubs turn into self-sustainable and self-supporting entities. The overall objective of these regulations is to set financial boundaries for clubs participating in national leagues and especially supranational competitions (UEFA Champions League and UEFA Europa League). Particularly, the financial balance of revenue and expenses is targeted to shift towards a break-even balance as well as a timely payment of liabilities. According to UEFA (2012), the policy is not a pursuit to abolish inequality, rather than encouraging a long run sustainable business model. UEFA formulated six major objectives for the FFP to achieve this goal:

1. "to improve the economic and financial capability of the clubs, increasing their transparency and credibility

2. to place the necessary importance on the protection of creditors by ensuring that clubs settle

their liabilities with players, social/tax authorities and other clubs punctually;

3. to introduce more discipline and rationality in club football finances;

4. to encourage clubs to operate on the basis of their own revenues;

5. to encourage responsible spending for the long-term benefit of football;

6. to protect the long-term viability and sustainability of European club football" (UEFA, 2012, p.2).

UEFA introduced two instruments with the no overdue payables rule and the break-even rule to meet the stated objectives. The no overdue payables rule means that all outstanding liabilities to affiliated parties such as employees, the government or other clubs need to be settled before the due date. The break-even rule is an additive, as those outstanding liabilities, which are considered as 'relevant' expenses must be covered with 'relevant' income. Generally, 'relevant' expenses and 'relevant' income means to be associated with football. *Appendix I* elaborates all 'relevant' expenses and 'relevant' incomes. Further, to support clubs and give time to adjust to the new FFP regulation, an acceptable deviation of EUR 5 million is granted. Due to the implementation periods, this level can be exceeded up to EUR 45 million for the monitoring periods assessed in the seasons 2013/14 and 2014/15; EUR 30 million for the monitoring periods assessed in the seasons 2015/16, 2016/17 and 2017/18, if these excesses are solely covered from equity parties. The UEFA Executive Committee can decide additional adjustment periods. Those regulations are also the basis for potential sanctions by the UEFA. Sanctions for not complying are financial penalties, a reduced number of players in the squad for European competitions, player transfer ban and disqualification for European competitions (Clayden et al., 2014).

Besides the official objective, various other effects are associated with FFP. Especially the break-even requirement interferes with finance and club strategy. However, besides the regulation of external

money injections, the competitive balance might suffer due to salary reduction effects and incumbent protection effects (Budzinski, 2014).

Financial benefactors such as Sheikh Mansour of Manchester City or Roman Abramovich of Chelsea FC are wealthy individuals funding football clubs by spending large amounts of money on transfer fees and player salaries. With the introduction of the FFP, financial benefactors are precluded from financing operating expenses as the break-even requirement only allows football related income. Still, external financiers could invest in long term club investments such as youth development and sports infrastructure. On the other hand, the restrictions are not consistent because sponsorships from companies are not controlled as long as they are not considered as a part of the company. For example, FC Schalke 04 has a sponsorship contract with Gazprom, which is not restricted by FFP or by any other regulation (Peeters and Szymanski, 2014).

Along with the FFP, several indirect economic effects arise. Although, FFP claims to be a regulation to encourage clubs to work within their financial abilities, the competition itself might suffer by a shift towards competitive imbalance. The break-even rule seems to have major impact on the player market capping transfer fees and player salaries by the restriction of relevant income. Particularly, the overall investment level decreases, leading to a shift in rents from players towards clubs and/ or UEFA. Such a constraint effects the player's attraction for a club/ league and induces an overall lower level of player talent (Peeters and Szymanski, 2014). However, the FFP affects the investment adjustments of incumbent clubs less because their relevant income is much larger compared to small clubs. The higher relevant income occurs from a bigger commercial market, national and international TV broadcast right share and prior sports success.

The FFP is an relative expense cap for each club. The individual restriction bases on the sum of the relevant club income, so small clubs cannot exceed their investments over their relevant income and therefore may not be able to catch-up with the incumbent clubs. Due to that, the club hierarchy in the

seasonal competition seems to enshrine, resulting in a lower level of competitive balance (Budzinski, 2014). Another model is the US-style cap which is an absolute cap leading to the same restrictions for all clubs. This cap leads to an increase of the CB and an improved profitability of clubs (Peeters and Szymanski, 2014). I expect a change in the CB with the introduction of the FFP, and therefore, I examine the impact of the FFP regulation on the CB in the European football leagues from 2003/04 to 2016/17.

2.4 Literature Review

Rottenberg (1956) is the first economist fostering the research on CB in sports. The paper differentiates between the three dimensions of match, seasonal and championship outcome uncertainty on the American Baseball league. Based on this approach, Sloane (1969) conducted a similar research for the English Football League with the focus on the distinction of win maximizing and profit maximizing football clubs.

A more recent study by Goossens (2006) shows that CB does not change dramatically over time for 11 major European football leagues (1963/64 - 2004/05). Besides the focus on seasonal and championship outcome uncertainty, the study elaborates several measurements for both dimensions. The paper focuses on the National Measure of Seasonal Imbalance (NAMSI) that eliminates problems of the basic measure of the standard deviation (SD) of the win percentage. For the championship analysis, the top 3 ranking measure is used, counting the teams reaching the first three positions per season by league. Overall, the within seasonal outcome uncertainty shows no overall pattern. The championship outcome uncertainty displays a pattern of the same teams to win. Although, two major regulatory changes happened with the Bosman ruling in 1995 allowing players to shift freely between (international) clubs and the introduction of the UEFA Club licensing in 2002, I cannot

observe an overall trend of the seasonal outcome uncertainty for European football. Still, a tendency of dominating teams arises with the same clubs finishing ranked in the top 3.

With the launch of the FFP regulation, a debate started regarding the objectives, instruments and the related direct and indirect effects on the European football industry. Despite, that empirical research is scarce, the scholarly community solely found negative impacts of the FFP on the CB.

Peeters and Szymanski (2014) show in their simulation results that the break-even instrument leads to reduced player wages in the largest European professional leagues. Comparing the results with the salary cap used in the US, no enhanced seasonal CB is identified. This is due to the restriction of potential investments by external benefactors into small clubs, to catch up with big clubs. Thus, the FFP strengthens the league hierarchy with leading wealthy clubs. Additionally, the break-even rule only functions as a rent shifting tool as the welfare of players and fans reduces, whereas clubs and UEFA gain in financial and influence matters. Madden (2014) gives supporting evidence for a negative impact of the FFP caused by the break-even requirement associated with a reduction in player wages, transfer fees and player talent leading to a declining CB and a lower fan utility. More specifically, Sass (2012) shows in a multi-period model that in the long run only a steady-state equilibrium with big clubs dominating the small clubs is possible for win-maximizing clubs. The break-even requirement restricts small clubs to compete due to higher budget constraints and the barrier of overspending or external funding. Big clubs have the leverage of past sporting success, the so-called glory hunter phenomenon. This contributes to financial strength with more spectators and a larger commercial market. Such leverage increases even more with the introduction of the FFP in 2010. Budzinski (2014) strengthens the arguments of restrictive effects by the break-even rule regarding the CB, however stating that the no overdue payables rule might be efficient enough to regulate the budget deficits of football clubs. On the one hand, government subsidies with tax liabilities or outstanding liabilities against players or other clubs would be repealed. On the other hand, external financiers are

still permitted without restrictions for their spending power. Thus, the no-overdue payable regulation would maintain transparency and sustainable management and new funds enter the football industry. Vöpel (2013) strengthens the argument of the glory hunter phenomenon and how the FFP adversely affects the CB. Earlier sporting success with the financial benefits for a few clubs drives to a market imperfection as these clubs dominate the league. Other clubs cannot compete with these clubs without external money, which is banned by the break-even rule. Thus, the study suggests a redistribution of income or a revenue sharing system. Such system needs to be adopted by all national leagues, to keep CB not only in national competition but also in international tournaments. Further, Vöpel (2013) states that the objectives are therefore not complete, which might be a reason for ineffective objectives in the first place, as there is no prioritization of objectives at all. Hence, the CB is a missing objective in the FFP regulation, also due its influence on financial stability. Preuss et al. (2012) explains with a game-theory approach the effect of FFP by the possibility of conviction and punishment and the associated shift in CB. Richer clubs keep overspending (even more) compared to poorer clubs after the implementation of FFP as they still compete with rich clubs being trapped in a prisoner's dilemma. The conviction likelihood of big clubs is smaller compared to small clubs as they cannot afford bypasses and the potential financial punishment by the UEFA resulting in a lower competitiveness. It further explains that FFP does not abolish financial injections but a redistribution of the usage. Discovering and exploiting loopholes is costly, so the investment into player salaries and transfer fees declines.

Franck (2013), as the main supporter of the FFP, claims that CB is self-regulating in the open-league system in European football. The promotion and relegation scheme enables clubs to switch between the several leagues, which leads to the most competitive allocation every season. Also, Franck argues that a higher competitive imbalance does not reduce fan utility as a 'fight' against relegation is as exciting as the Champions League final. Further, the paper examines that FFP might

lead to reduced player salaries and thus, to lower CB caused by the relative break-even requirement depending on the individual 'relevant' football income but the FFP increases the efficiency of the club management. In the long run, a better management facilitates even higher salaries, so that the negative effect on CB is just a temporary effect. The theoretical claims of better and a more efficient management are not provided with arguments and thus are incomprehensible. Additionally, the allegation of only a short term reduction in CB and player salaries has also no empirical backing. The financial consolidation by "better management" is also stated in Franck and Lang (2012) and the reasoning for restricting external money injections. Although, financial benefactors are potentially able to create a more competitive club by purchasing player talent, the risk arises of "non-virtuous" competitive balance. This means that the accumulated fan utility might shrink because of a lower acknowledgement for the sporting success of teams owned by a financial benefactor. To counteract against this likely fan behavior, FFP caps the external money injections and promotes to invest into sustainable youth and infrastructure development for long lasting financial stability. This theoretical claim has the contrary effect as financial benefactors have a positive impact on the attendance numbers in stadiums. Sheik Mansour is the owner of Manchester City since 2008. The average attendance increased from 43,000 in season 2007/08 to 54,000 in season 2017/18. Similar effects happened after Sheikh Tami Bin Hamad Al Thani bought Paris Saint-Germain (PSG), in season 2011/12 the average attendance number was 29,000 increasing to 47,000 in season 2017/18[3]. Lang et al. (2011) distinguishes between investments of financial benefactors into large-market and small-market clubs compared to profit-maximizing clubs. Overall, financial benefactors have either a negative impact on the CB if they invest in large market clubs as these clubs mature to league dominating clubs or the social welfare declines when they invest in small market clubs, respectively. The empirical interpretation is biased towards finding negative effects of financial benefactors. The results present positive social welfare effects by investing into large clubs. This can be seen by the attendance

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[3]The attendance data are retrievable at http://www.european-football-statistics.co.uk

numbers of Manchester City and PSG. Investments into small clubs increases the CB as these clubs can compete then with larger clubs. Thus, financial benefactors have positive effects on CB and the fan utility. Storm and Nielsen (2012) explain the objectives of FFP by microeconomic club behavior. Professional football clubs depend on the level of budget constraint they face. According to the paper, the term 'too big to fail', known from the banking sector, applies also for football clubs. Hence, many clubs benefit from a soft budget constraint because of government subsidies[4], financial institution backing[5] and rich sponsorship (companies and benefactors). The regional actors are not interested letting them fail, thus clubs overspend without severe consequences. Still, different levels of the soft budget constraints exist between the football clubs because of imbalanced access to external money. As mentioned earlier, football clubs can fail by bankruptcy, thus they face severe consequences. Further, for financial benefactors the investment into a club can also be a profitable business. Roman Abramovich invested around EUR 1 billion into Chelsea FC transfer spending but the value of Chelsea FC including brand value, team value and enterprise value is worth more than EUR 3 billion (Banks, 2018). Thus, financial benefactors are not investing without a profitable strategy and the soft budget constraint is limited[6].

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[4]Government subsidies are extending loans without intention of repayment, no enforcement of tax payables as well as buying the training facilities at an overrated price and rent it back at a price, lower than the market price.

[5]Financial Institution support clubs by extending loan contracts, new repayment schedule or interest renegotiation. (Buraimo et al., 2006; Hamil et al., 2010)

[6]The financial data are retrievable at https://www.statista.com/statistics/267294/fc-chelsea-london-brand-team-value/

3 Data

I collected data for 24 countries including the first division and second division for men from season 2003/04 to 2016/17[7] to conduct the empirical analysis of the FFP impact on the CB in European professional football. The dataset consists of the most relevant football leagues measured by financial strength and international sporting success.[8]

The use of the first division and second division is necessary to compare possible effects of the FFP regulation on the CB. The second division stays unaffected assuming that the clubs do not comply to the rules as no strong punishment from the UEFA is applicable. For an appropriate comparison of the seasonal balance, seven years prior the introduction of the FFP and seven years after are observed.

I focus on the seasonal and championship outcome uncertainty within and between countries to evaluate the CB across years. Goossens (2006) introduced various measurements for both seasonal and championship outcome uncertainty. I concentrate on the National Measure of Seasonal Imbalance (NAMSI) and the top 3 league ranking and championship count measure for championship CB.

NAMSI compares the actual standard deviation with the worst possible standard deviation with regards to the CB. Importantly, the measure is appropriate for three reasons. Firstly, it is not necessary to provide a probability distribution for the win percentage. Secondly, the comparison of the actual CB with the worst CB is more intuitive than finding an 'ideal' CB. Thirdly, the divisions, between and within the countries, have a different number of clubs, thus, a relative measure is more accurate than an absolute measure.

Being more precise, to calculate the NAMSI, a minimum and maximum standard deviation is required. The minimum standard deviation, the perfect competitive balance of the league, appears

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[7] *Appendix II* presents a country list.

[8] I gathered the data from several sources for the league tables. I used transfermarkt.com and soccerway.com. For the Champions League revenues, I used the UEFA Homepage and the attendance values are from rsssf.com.

when all teams have the same win percentages of 0.5, and accordingly the same amount of points. This means, that all teams win the same number of games or tie all matches. Thus, the standard deviation and the NAMSI is zero. The maximum standard deviation, the perfect competitive imbalance of the league, emerges when the first team wins all matches, the second team wins all apart from the match against the first. This goes until the last team that wins none of the matches. Resulting from that, the highest standard deviation is reached, so the NAMSI is 1. Concluding, the NAMSI ranges between 0 and 1 for all observations. The closer NAMSI approaches 1, the lower is the overall CB of a league. The formula illustrates the mathematical calculation[9]:

$$NAMSI = \frac{sd_{actual} - sd_{min}}{sd_{max} - sd_{min}} = \sqrt{\frac{\sum_{i=1}^{n}(w_i - 0.5)^2}{\sum_{i=1}^{n}(w_{max} - 0.5)^2}}$$

As the NAMSI does not take the ranking of specific clubs into account, it solely gives evidence for seasonal competitive balance. However, I assume that also the ranking of clubs is important to evaluate the CB. A competitive imbalance emerges if some clubs are dominating a league, meaning that these clubs usually finish the season in the top positions. I separate the dataset into the years before and after the introduction of the FFP to capture the dynamic effect of the championship race and the leverage of the FFP regulation. The dataset starts in season 2004/05 and ends in 2016/17 with the breakpoint in 2011/12 to have the equal number of years before and after the FFP regulation. I take the top 3 rankings, as in the most leagues three clubs are competing for the championship. Also, the first three rankings are mostly the positions, to qualify for the UEFA competitions which are attractive to reach for monetary and symbolic matters. Obviously, the 'big five' leagues have more clubs in the European tournaments but especially for the UEFA Europa League the clubs change every season. Still, the 'ideal' threshold for the top ranking is difficult to evaluate as the number of dominating clubs of the leagues is different. Further, to discover if a league has one dominating team

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[9]The NAMSI measure is from Goossens (2006).

I also analyze the dynamic change of champions during the time frame in the first division.

The two measures NAMSI and top 3 ranking are providing evidence of the level of the seasonal and championship CB. As I observe the impact of the FFP on the CB, the explanatory variable *FFP* is a dummy variable being 1 for all the seasons after 2011/2012, otherwise 0. I assume that only first division clubs are affected by the FFP because no hard punishment is possible for clubs which cannot participate in the European tournaments, therefore a differentiation of the first and second leagues is required. Further, as the second division should not be influenced by the FFP regulation, the second division functions as a control group in the analysis. The variable *division* indicates if the league is the first division or the second division. The dummy variable is 1 for the first division and 0 for the second division. A major difference between the two leagues in each country is the potential participation in the UEFA tournaments. Only first division clubs have the opportunity to qualify and then compete for the international trophies. Already being qualified for the competitions yields high financial benefits for clubs and gain at least a short term financial advantage compared to non-participants. The total prize money is distributed to all 32 Champions League participants depending on their performance and size of market pool (TV income from each country). In the season 2003/04 the total amount of money to distribute was around EUR 526 million[10] rising to around EUR 1.3 billion in season 2016/17 (UEFA, 2017). Hence, within 14 years the award fund increased almost 250%. The continuous variable *lncl_rev* accounts for the accumulated prize money of the league.[11]

I include several control variables in the analysis, to record potential influences on the CB measures. First, I added the categorical variable *attendance* being the average number of fans of all clubs per season visiting the matches.[12] The number of live fans can have an impact on the performance of referees due to the phenomenon of social pressure in football stadiums. Especially, the home team

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[10]The total amount of Champions League is the sum of all individual payouts. The data is collected from UEFA.
[11]I use the natural logarithm of the accumulated CL revenue to obtain a normal distribution.
[12]I use the natural logarithm of the absolute attendance number to obtain a normal distribution.

gains advantage from a referee under social pressure (Garicano et al., 2005).

The European football leagues are structured in an open-league system meaning that each season some clubs are relegated to the next lower adjacent division and the same number of clubs are promoted to the higher adjacent division. Thus, the open-system attempts to filter every season the divisions to keep up a higher level of CB. To control for these effects, I introduce the continuous variables *promotion* and *relegation*, which are the numbers of clubs promoting or relegating relative to the size of the division.

4 Methodology

4.1 Seasonal Competitive Balance

The aim of the study is to examine the impact of the FFP regulation on the CB in the European professional football industry. I use the Difference in Difference estimator, which will be referred to as the DiD estimator throughout the thesis to evaluate the seasonal CB. This method facilitates to estimate causal effects and is a commonly used approach to assess the effect of a policy.

Table 1: Seperation of the timeframe for the DiD analysis

DiD	Non-Treatment Group (T=0)	Treatment Group (T=1)
Before FFP (t=0)	Control group before FFP (I)	Treatment group before FFP (II)
After FFP (t=1)	Control group after FFP (III)	Treatment group after FFP (IV)

When implementing DiD, the observed groups are split into four quadrants (see *Table 1*). Firstly, there is a split between the groups that are observed with a dummy variable T. Individuals that do

not receive treatment (control group) are set as T = 0, whilst individuals that obtain a treatment (treatment group) are set as T = 1. The secondary split is observed within two-time periods which is accompanied with a dummy variable t. t = 0 refers to the periods before the policy has been implemented, while t = 1 refers to the period after the policy implementation. Therefore, each individual has two observations, one pre-treatment and one post-treatment (Lechner, 2010). Ultimately, the DiD estimator is the difference in average outcome of the treatment group pre-treatment (II) and post-treatment (IV) subtracting the difference in average outcome of the control group pre-treatment (I) and post-treatment (III). Thus, the time trend of the treatment group is eliminated by the control group. The resulting difference is the effect of the policy.

The parallel trend assumption needs to be fulfilled to assure internal validity of the DiD model. This requirement necessitates a constant difference of the treatment and control group in the absence of the treatment. The parallel trend cannot be statistically tested but a visual analysis of both groups is possible.[13] *Figure 1* presents the seasonal CB of the treatment and control group. The assumption holds as the trend of both lines can be seen as parallel with the effect in the season 2010/11.

I introduce three different seasons as the threshold for FFP. The introduction of the FFP regulation was in 2010/11 but fully enforced with the monitoring periods starting in 2011/12 for the instruments of no overdue payables and the break-even requirement. Thus, setting the threshold in 2010/11 and 2012/13 serves as a robustness check of the results obtained with the breakpoint in 2011/12. The first threshold in season 2010/11 gives evidence if the clubs are changing their investment strategy based on the introduction of FFP although the penalties for violating the regulation are not yet effective. The third threshold in season 2012/13 shows that the results are not changing even if I set the breakpoint after the enforcement period with the unique peak.

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[13]A more elaborate explanation of the DiD model can be retrieved from Angrist and Pischke (2009).
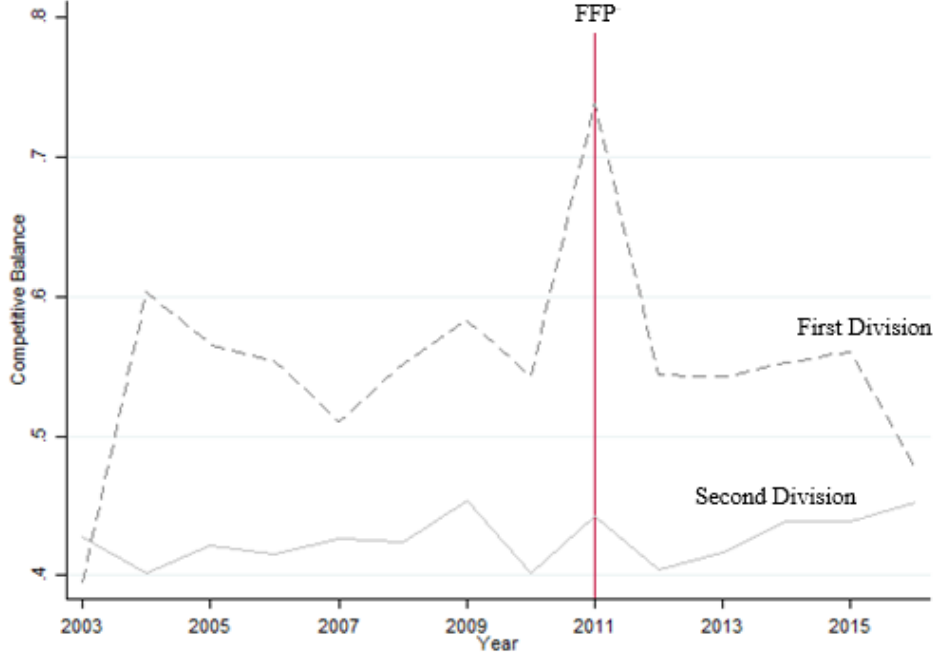
Figure 1: Development of the average Competitive Balance for the first and second division from 2003/04 to 2016/17

To investigate the impact of FFP on the seasonal CB of European football leagues, the first hypothesis states that the seasonal CB declines in the first divisions as a consequence to the enforcement of the FFP regulation by the UEFA in season 2010/11.

For the analysis, I use the following equation:

$$NAMSI_{it} = \alpha_i + \beta_1 FFP_t + \beta_2 FFPxdivision_{it} + \beta_3 ControlVar_{it} + \beta_4 LeagueFE_i + u_{it}$$

Therefore, $NAMSI$ measures the standard deviation of the win percentage for league i in period t. The variable division is indicated with 1 for all first divisions, otherwise 0 if second division. The enforcement of the FFP (variable FFP) in season 2011/12 denotes the pre-treatment period from 2003/04 to 2010/11 with 0 and the post-treatment from 2011/12 to 2016/17 with 1. The interaction term $FFPxdivision$, is the main explanatory variable and gives evidence if and how the FFP regulation affects the CB in the first divisions after its implementation. Additionally, I add the variables *Control*

Var and *LeagueFE* (country-division level) controlling for time invariant effects on the CB. The time-varying errors u_{it} account for the unobserved individual heterogeneity which affect the dependent variable *NAMSI* respectively. I transformed the variables *CL_rev* and attendance into the natural logarithm to preserve a normal distribution.

As discussed earlier, the UEFA CL is the highest competition level with sizable financial rewards for participating. Those clubs participating frequently have a financial advantage over the other clubs with the abolishment of external benefactors caused by the FFP. Clubs earning CL revenues increase their 'relevant income' leading to higher financial capabilities compared to their competitors which effects negatively the CB in national leagues. Therefore, I conjecture that CL revenue does have a negative impact on the seasonal CB in first divisions after the enforcement of the FFP in season 2011/12 compared to second divisions. I conduct a Triple-Difference (DDD) analysis to examine the effect.

$$NAMSI_{it} = \alpha_i + \beta_1 FFP_t + \beta_2 CL\_rev_{it} + \beta_3 FFPxdivisionxCL\_rev_{it} + \beta_4 ControlVar_{it} + \beta_5 LeagueFE_i + u_{it}$$

The dependent variable *NAMSI* measures the standard deviation of the win percentage for league i in period t. The main explanatory variable is the triple interaction term $FFPxdivisionxCl\_rev_{it}$ consisting of the dummy variable *FFP*, the dummy variable *division* and the continuous variable *CL_rev*. This variable gives evidence about the influence of CL revenue in first divisions after the FFP enforcement on the win probability compared to peer first division and second divisions that receive no CL revenues. I add likewise the DiD model a set of *Control Var* as well as a *LeagueFE*. The error term u_t capturing the effect of omitted variables and time varying errors.

4.2 Championship Competitive Balance

I introduce the measures of the top 3 ranking and the champions ranking to evaluate the championship uncertainty. Counting the number of clubs finishing at the end of the season ranked the first three position or being champion before and after the implementation of the FFP. I use three different seasons as the threshold for robustness reasons and to show possible trends. Moreover, applying the measure for the second division functions as a robustness test. I then can compare the results of the first and second division.

I assume that the number of clubs ranked top 3 is declining after the introduction of FFP due to lower financial abilities of small clubs challenging the incumbent clubs. Therefore, the third hypothesis states that the introduction of the FFP reduces the number of clubs ranked top 3.

A similar procedure is used for the championship ranking. I assume that the number of champions decreases due to an emerging league hierarchy after the implementation of FFP. Fewer clubs are competing for the championship and even the clubs competing for the top 3 ranking do not have the possibility to reach the champions title.

The paired t-test analysis compares the pre-periods and post-periods of the FFP. This measure gives evidence if a difference between both groups exists and therefore, being unequal to zero. Particularly, the first division of each country is divided into two groups by the FFP threshold and then pairwise matched. Thus, the number of top 3 ranked clubs and the number of champions before and after the FFP are compared within a country.

I further adjusted the dataset due to the three different thresholds, to compare the same number of periods before and after the implementation. I compare seven years before and after the enforcement of FFP setting the FFP threshold in 2010/11. Shifting the threshold one, respectively, two years forward, the periods decline to six years and five years before and after the introduction of FFP.

5 Results

5.1 Seasonal Competitive Balance

Table 2 reveals the summary statistics for the variables of the seasonal CB analysis. The total number of observation should be 672. I miss five observations because values for the second division of Greece and Croatia in the years 2013 and 2014, respectively 2003 to 2005 are not available. Further, two more values for the NAMSI of Slovenia's second division are missing. The dependent variable NAMSI presents a high variation between 0.126 and 0.693 with a standard deviation of around 0.1 for 665 observations. FFP and League have a mean of 0.5 which means I compare the same number of first and second divisions as well as the same number of periods before and after the implementation of FFP. The CL revenue and attendance number displays a high variation and deviation between and within the divisions. The variable relegation presents a maximum of 50% of teams are relegated. The second division of Belgium and the first division of Denmark were restructured in 2015 and 2016 resulting in a smaller division.

Table 2: Summary Statistics of the variables of the DiD and DDD analysis

	Obs.	Mean	Std. Dev.	Min	Max
NAMSI	665	0.406	0.092	0.126	0.693
FFP	667	0.501	0.500	0	1
League	667	0.504	0.500	0	1
CL_rev	667	1392.465	3332.825	0	24458
Attendance	638	8459.861	9250.744	164	45116
Relegation	667	0.153	0.052	0	0.5
Promotion	667	0.067	0.074	0	0.344

Notes: The variable *CL_rev* is divided by 10,000.

Table 3 presents the results from the DiD estimations. In columns (1) and (2) are the results with

the FFP introduced in season 2010/11, columns (3) and (4) display the results by setting the FFP threshold in 2011/12 and columns (5) and (6) show the results setting the FFP threshold in 2012/13.

Table 3: Difference-in-Difference estimation for the Competitive Balance in European Football

	(1)	(2)	(3)	(4)	(5)	(6)
NAMSI	2010/11	2010/11	2011/12	2011/12	2012/13	2012/13
FFP	-0.00028	0.00365	0.00269	0.00842	-0.0025	0.00318
	(0.0128)	(0.0124)	(0.0126)	(0.0115)	(0.0133)	(0.0121)
FFPxLeague	0.00371	0.00222	0.00863	0.00678	0.0106	0.00899
	(0.0187)	(0.0188)	(0.0179)	(0.0174)	(0.0183)	(0.0177)
CL_rev		-0.00044		-0.0003		-0.0003
		(0.00073)		(0.00077)		(0.0008)
Attendance		0.0101		0.0121		0.0115
		(0.0204)		(0.0207)		(0.0207)
Relegation		0.0934		0.0933		0.0947
		(0.0751)		(0.0741)		(0.0753)
Promotion		-0.273		-0.284		-0.278
		(0.376)		(0.367)		(0.370)
Constant	0.407***	0.29	0.404***	0.263	0.406***	0.271
	(0.00687)	(0.223)	(0.0055)	(0.225)	(0.00448)	(0.225)
Observations	665	636	665	636	665	636
R-squared	0.413	0.434	0.415	0.437	0.414	0.435
League FE	Yes	Yes	Yes	Yes	Yes	Yes
Errors Clustered	Yes	Yes	Yes	Yes	Yes	Yes

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The results show similar patterns regardless the setting of the FFP. The dummy variable FFP has a negative impact on the CB as the deviation of winning percentage between clubs slightly increased by 0.003. This means, that after the introduction of the FFP in season 2011/12 the CB decreases for all leagues, in fact not statistically significant. Further, the main explanatory variable *FFPxLeague* captures the effect of the FFP regulation after its implementation on the CB in all European first divisions. The variable coefficient gives evidence that the NAMSI increases by 0.00863 leading to a reduced CB. Also, the same effect appears for the different FFP threshold and still, the coefficients are

insignificant. The *Constant* turns from a 1% significance level into insignificance by adding control variables to the models (2), (4) and (6). I analyze the correlations of the variables to detect potential multicollinearity of the variables which can be the reason of this phenomenon. The variance inflation factor (VIF) gives evidence of multicollinearity if the results are above 10. The obtained values are below 10 except for two, however the mean of all variables is 6.27. Hence, I cannot observe collinearity among the variables.[14] Another counterintuitive effect is the small positive impact of CL revenue on the NAMSI as I assumed that the unequal prize money distribution has a negative effect on the CB, however statistically not significant. Also, a higher social pressure occurs by a higher attendance leading to an advantage for the home club and therefore negatively affecting the CB. The open-league system has a positive influence on the seasonal CB as the accumulated effect of the number of clubs being promoted and relegated decreases the NAMSI. Concluding, I cannot confirm my expectations that the FFP regulation has a significant negative influence on the CB on first divisions after its enforcement in season 2011/12.

I extend the model to a triple difference estimation, to extract a more accurate effect on the CB after the FFP enforcement if the league receives CL revenues. I added the three-way interaction term *FFPxLeaguexRev* to capture this effect. In *table 4*, Column (3) and (4) present an increase of the NAMSI for first leagues after the implementation of the FFP in season 2011/12 with receiving Champions league prize money. Hence, the CB slightly decreases in first divisions after season 2011/12 with increasing Champions League revenue at a 10% significance level when adding control variables. This shows that leagues obtaining more CL revenue are likely to dominate clubs with reduced chances for other clubs to challenge them. For robustness reasons, I included the pre-season and the post-season of the enforcement of the FFP. The official introduction in season 2010/11 is still unaffected, which is reasonable as no threat of a penalty for the disregard of FFP existed. Therefore, clubs maintained

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[14] *Appendix III* presents the VIF values of the variables.

Table 4: Triple-Difference Estimation for the Competitive Balance in European Football

	(1)	(2)	(3)	(4)	(5)	(6)
NAMSI	2010/11	2010/11	2011/12	2011/12	2012/13	2012/13
FFP	-0.00464	-0.00235	-0.00021	0.00366	-0.0053	-0.00129
	(0.0117)	(0.0118)	(0.011)	(0.0107)	(0.0113)	(0.0110)
lnCl_rev	-0.00099	-0.0011	-0.00086	-0.001	-0.00081	-0.00094
	(0.00085)	(0.00083)	(0.00083)	(0.00079)	(0.00082)	-0.00079
FFPxLeaguexRev	0.00121	0.00136	0.00141	0.00155*	0.00155	0.00169*
	(0.00097)	(0.00097)	(0.00093)	(0.00088)	(0.00093)	(0.00088)
lnattendance		0.0107		0.0122		0.0117
		(0.0202)		(0.0204)		(0.0204)
relegation		0.0995		0.100		0.0986
		(0.0751)		(0.0736)		(0.0749)
promotion		-0.266		-0.276		-0.268
		(0.381)		(0.372)		(0.376)
Constant	0.418***	0.288	0.413***	0.268	0.415***	0.276
	(0.0144)	(0.219)	(0.0143)	(0.222)	(0.0143)	(0.222)
Observations	665	636	665	636	665	636
R-squared	0.416	0.437	0.418	0.441	0.418	0.44
League FE	Yes	Yes	Yes	Yes	Yes	Yes
Errors Clustered	Yes	Yes	Yes	Yes	Yes	Yes

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

strategically their spending behavior with external finance leading to a more equal win distribution. In season 2012/13, I obtain similar results as in season 2011/12. The three-way interaction slightly increases and is significant at a 10% level. Hence, the results show a small negative impact on the CB within first divisions after the FFP enforcement in season 2011/12 if the accumulated CL revenues in a division increases. The shift of the *Constant* from highly significant to insignificant is not due to collinearity as the VIF value is below 10.[15] Concluding, the seasonal CB in first divisions across Europe is not affected by the implementation of the FFP regulations. However, seasonal CB in first divisions changes negatively after the introduction of FFP relative with increasing accumulated CL revenues to other first and second divisions.

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[15]See Appendix IV

5.2 Championship Competitive Balance

The triple difference estimator gives evidence of a reduced seasonal CB after the FFP leading to the presumption that the first divisions are dominated by some incumbent clubs. The summary statistics demonstrates that after the FFP the number of clubs ranked top 3 and the number of champion's declines slightly. Interestingly, the minimum number of clubs does not change for both measures due to the FFP but the maximum number of clubs declines. This means that before FFP, dominating clubs existed in some divisions but after FFP, a smaller number of dominating clubs in some division arises.

Table 5: Summary statistics of the Top 3 ranking and the Number of Champions

Top 3 ranking					
	Obs.	Mean	Std. Dev.	Min	Max
Before FFP	24	6.583	1.692	4	10
After FFP	24	6.333	1.308	4	9
Number of Champions					
	Obs.	Mean	Std. Dev.	Min	Max
Before FFP	24	3.412	1.501	1	8
After FFP	24	2.833	1.167	1	6

I conduct a paired t-test, to examine impacts of FFP on championship CB by comparing the number of clubs ranked at the first 3 positions at the end of the seasons before FFP and after FFP. Therefore, the periods with the number of clubs ranked top 3 before the implementation of FFP are the control group and the periods with the number of clubs ranked top 3 after the implementation of FFP are the treatment group. I apply likewise the seasonal CB three different thresholds to show potential changes and to strengthen the results. *Table 6* presents the results of the paired t-test for the three different FFP thresholds. The means of estimation (2) and (3) show the number of clubs ranked

top 3 decreases by 0.25 and 0.333 on average but statistically insignificant compared to estimation (1) where the clubs ranked top 3 increases slightly by 0.083 on average. Hence, the enforcement of FFP in 2011/12 is the breakpoint of reduced championship CB by a reduced number of clubs entering the top positions at the end of the seasons. The results show that the difference between the numbers of clubs ranked top 3 before and after the FFP implementation are not statistically significant. I conclude that the average difference of both groups is equal to zero. The top 3 ranking gives no statistically significant evidence of reduced championship CB after the implementation of FFP. The results show similar patterns conducting the same analysis for the second division and therefore supports my findings for the first division.[16]

The second measure of championship uncertainty compares the number of champions before and after the FFP implementation. All three estimations with the different FFP threshold show a positive change in difference between the pre-period and post-period. The p-value indicates that the average difference of the two groups is not equal to zero. This means that after the FFP implementation, the number of clubs being champion decreased in estimation (1) by 0.5 clubs and in estimations (2) and (3) by 0.583 and 0.542 clubs. This presents declining championship CB in first divisions for all European countries after the implementation of FFP. However, the second divisions are showing an improving trend of their CB after the introduction of FFP even if the results are not statistically significant. Thus, an opposite trend comparing to the first division.[17] Further, the results show no improving trend of the championship imbalance by setting the FFP thresholds later. On the contrary, FFP fosters the decreasing championship CB and sets league hierarchies.

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[16]The results are presented in appendix V. I have missing data for the second division of Greece and only for the third estimation for the second division of Croatia.

[17]See footnote above

Table 6: Paired T-test for Top 3 ranking and Number of Champions in first divisions

Top 3 ranking

Est.	FFP	Period	Obs	Mean	Std. Err.	Std. Dev.	95% Conf. Inter.		Diff.	p-value
1	2010	Before FFP	24	6.917	0.324	1.586	6.247	7.586	-0.083	0.8285
		After FFP	24	7.000	0.341	1.668	6.296	7.704		
2	2011	Before FFP	24	6.583	0.345	1.692	5.869	7.298	0.250	0.5192
		After FFP	24	6.333	0.267	1.308	5.781	6.886		
3	2012	Before FFP	24	6.125	0.320	1.569	5.462	6.788	0.333	0.3567
		After FFP	24	5.792	0.241	1.179	5.294	6.289		

Number of Champions

Est.	FFP	Period	Obs	Mean	Std. Err.	Std. Dev.	95% Conf. Inter.		Diff.	p-value
1	2010	Before FFP	24	3.375	0.215	1.056	2.929	3.821	0.500	0.025
		After FFP	24	2.875	0.211	1.035	2.438	3.312		
2	2011	Before FFP	24	3.417	0.306	1.501	2.783	4.051	0.583	0.013
		After FFP	24	2.833	0.238	1.167	2.340	3.326		
3	2012	Before FFP	24	2.917	0.216	1.060	2.469	3.364	0.542	0.025
		After FFP	24	2.375	0.207	1.014	1.947	2.803		

6 Discussion and Limitations

The conducted analysis presents some evidence of changing seasonal and championship CB across the European football industry after the enforcement of FFP. The impact of FFP on both types of CB should be more observable regarding the theoretical findings of previous research. Those small effects can be due to ineffectiveness of the FFP regulation. Firstly, the policy itself is not elaborated in detail as several loopholes exist. Such loopholes are sponsorship transactions, state subsidies and tax/ exchange rate differences. Financial benefactors evade the FFP boundaries by financing their club with related party transactions. These transactions are not effectively regulated and for

example exploited by Manchester City with the Etihad sponsorship which is the airline company of Manchester City Owner Sheikh Mansour. Further, possible state subsidies changed from extensions of overdue tax liabilities into underpriced lease agreements of the stadium or trainings facilities. The local government purchases the facilities overpriced and lease it back to the club at below market price. These accounting bypasses allow clubs to maintain their spending behavior. Secondly, the penalty instruments for not complying with the non-overdue payables and the breakeven rule are potentially ineffective. The punishments of financial penalties, a reduced squad or disqualification of international UEFA competitions do not discourage other teams to break the FFP regulation. In 2014 Manchester City received the highest financial penalty of EUR 60 Million for repeated disregard of the policy, following by FC Porto with a smaller financial penalty and a reduced squad for the UEFA competitions. However, in May 2018 the UEFA punished AC Milan as the first club in history of FFP with the exclusion from UEFA competitions for the next two years due to not meeting liabilities. AC Milan appeals to this judgment. Researchers and football experts did not expect that UEFA would ever ban a football club because of the fear that the best clubs create their own Champions League which is not governed by the UEFA. Many other clubs (e.g. PSG, Barcelona) are under surveillance by the UEFA Club Financial Control Body for potential disregard of the FFP.

The introduction and enforcement of the FFP happened seven years ago and lead to a short-term volatility in 2011/12 (see *Figure 1*). As still some clubs do not comply with FFP, it is not possible to observe the total effect of the regulation. The results show a tendency of a reduced seasonal and championship CB which might be even stronger if all clubs accede and violations of the policy are penalized immediately and harder. Thus, I assume that in the long term a larger competitive imbalance may be realized if FFP is completely effective. Such trend can be expected due to the obtained results of the seasonal and championship CB analysis. Difficulties appear by evaluating the change of the championship CB. I use the absolute number once I compare the number of teams ranked

top 3 or being champion. However, it is observable that in some first divisions a structural change of clubs appears. This means that dominating clubs occur in the early periods of the dataset but after several years they are replaced by other clubs which become dominant afterwards. The absolute number of top ranked clubs does not change, only a relative change is observable. Particularly, this happens in France with Olympique Lyon being dominant in the beginning and is substituted by Paris Saint-Germain. Similar club replacements for the championship race or the top 3 ranking are Manchester United and Manchester City, Internazionale Milan and Juventus Turin, and FC Valencia/ FC Sevilla and Atlético Madrid. An analysis needs to be based on the clubs and their ranking for a longer time period to detect if this structural change is due to external factors or because of club internal factors.

Further, some concerns appear regarding the data. Although, the observed time frame are the most recent 14 years, the league structure of some countries changed in the meantime. An increase or decrease in the number of teams per league or a change in the play-off system leads to difficulties of comparing within a country and across countries. Additionally, demotions of clubs due to bankruptcy or violating league regulations are changing the league structure and bias, especially the championship CB. Although, these difficulties are identified and considered in the data mining process, they could still be reason for measurement errors. Moreover, the economic strength of the countries differs strongly. In poorer countries (mostly eastern countries), the clubs receive lower revenues through TV rights, commercials and sponsorships. Hence, their financial bases are weaker compared to incumbent clubs in England, Spain, Italy, France or Germany.

A final limitation is in the DiD model. Although the parallel trend assumption is fundamentally fulfilled with the visual inspection, a possible inconsistency remains as no empirical testing is practicable.

7 Conclusion

The introduction of the FFP regulation by the UEFA for the European football industry in 2010/11 remains a controversial policy in the research community and across football experts. The regulation restrains the financial abilities of football clubs as the break-even rule only allows to settle 'relevant expenses' with 'relevant income' which induce a ban of external finance. This leads to a reduced financial capability of smaller football clubs and bolster the position of incumbent clubs with large 'relevant income'. The unequal financial strength of clubs directs towards competitive imbalance within a league and across the countries shown in UEFA competitions following the theoretical approaches of research fellows.

This study sheds light on the impact of the FFP regulation on the seasonal and championship CB in European football leagues between 2003/04 and 2010/11. The results show that the seasonal CB decreases after the enforcement of the FFP in 2011/12, however not statistically significant. The introduction of FFP 2010/11 does not affect the seasonal CB until the enforcement instruments with no overdue payables and the break-even rule come into effect as the bases for punishment. Due to the exclusion of external money injections, CL revenues lead to a small reduction of the seasonal CB after the FFP enforcement. Only a few clubs receive CL prize money in first division resulting in a financial advantage associated with a more unequal win distribution in the league. Further, clubs reaching the top 3 positions or finishing as champion decrease also after the implementation of FFP. The results for finishing top 3 are not statistically significant, however indicate a reduced championship CB. The number of champions declined statistically significant after the introduction of FFP in 2010/11 with a constant trend.

Hence, the FFP has a moderate negative impact on the seasonal and championship CB. Although, UEFA never revealed CB as an official objective, they claim a potential positive impact on it. This

is also due to antitrust issues of UEFA because they are granted if they maintain a certain level of competitive level. In case FFP - and especially the break-even rule - decrease the CB and functions as a tool of rent shifting away from players and fans towards clubs/ owners and UEFA, the EU law competition and antitrust authorities investigate the FFP regulation and UEFA.

The FFP seems effective regarding their official objective but also evokes consequences that reduces general benefits of fans and players. Therefore, to restore financial 'discipline and rationality' of European football clubs and increase the rents of fans, a better regulation would be the US-style salary cap as it regulates the salaries of players, increases the profitability of clubs and increases the CB.

8 Appendix

Appendix I: List of 'relevant and 'non-relevant' transactions

Relevant Income	Relevant Expenses
- gate revenues	- costs of sales and materials
- revenues from sponsorship and advertising	- wages and salaries (including related
- revenues from broadcasting rights	expenses such as social security contributions
- commercial activities revenues (merchandising,	or medical care)
food and beverages sales, conferencing, lotteries, etc.)	- other operating expenses (match expenses,
- other operating income (including non-football	administration and overhead expenses)
income related to the club)	- finance costs and dividends
- finance income (interest revenue)	

Non-Relevant Income	Non-Relevant Expenses
- income transactions above fair value [18]	- expense transactions below fair value
- donations and assumptions of debt by third person	- youth development
- income from non-football operations not related	- development activities (promoting parti-
to the club	cipation in sports or advancing social
- income from non-monetary credits (revaluations of	development in education, health, amateur
assets and inventories)	sports, etc.)
	- non-monetary debits and charges

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[18]The UEFA specify the fair value of relevant transactions according to conventional business practices. In case, the assessed fair value differs from the recorded value, then an adjustment has to be made. For income, no upward adjustment is allowed, in the case of expenses, no downward adjustment is allowed (UEFA 2012: 75, 78).

Appendix II: Country list

Country ID	Country	Country ID	Country
1	Germany	13	Denmark
2	England	14	Sweden
3	France	15	Greece
4	Italy	16	Poland
5	Austria	17	Slovenia
6	Spain	18	Russia
7	Belgium	19	Croatia
8	Scotland	20	Slovakia
9	Netherlands	21	Czech Republic
10	Switzerland	22	Ukraine
11	Portugal	23	Finland
12	Turkye	24	Norway

Appendix III: VIF test for Multicollinearity in the DiD model

	VIF	1/VIF
FFP	2.16	0.463
FFPxLeague	3.16	0.316
LnCL_rev	4.81	0.208
LnAttendance	26.49	0.038
Relegation	2.34	0.427
Promotion	22.31	0.045
LeagueFE	5.766	0.173
Mean VIF	6.27	

Appendix IV: VIF test for Multicollinearity in the DDD model

	VIF	1/VIF
FFP	1.48	0.675
LnCL_rev	5.81	0.172
FFPxLeaguexRev	2.60	0.385
LnAttendance	26.51	0.038
Relegation	2.35	0.426
Promotion	22.30	0.045
LeagueFE	5.647	0.238
Mean VIF	6.24	

Appendix V: Paired T-test for 'Top 3 ranking' and 'Number of Champions' in second divisions

Top 3 ranking

Est.	FFP	Period	Obs	Mean	Std. Err.	Std. Dev.	95% Conf. Inter.		Diff.	p-value
1	2010	Before FFP	24	15.455	0.630	2.956	14.144	16.765	-0.909	0.891
		After FFP	24	15.545	0.545	2.558	14.411	16.680		
2	2011	Before FFP	24	14.045	0.507	2.380	12.990	15.101	0.409	0.388
		After FFP	24	13.636	0.444	2.083	12.713	14.560		
3	2012	Before FFP	24	12.261	0.399	1.912	11.434	13.088	0.435	0.179
		After FFP	24	11.826	0.370	1.775	11.059	12.594		

Number of Champions

Est.	FFP	Period	Obs	Mean	Std. Err.	Std. Dev.	95% Conf. Inter.		Diff.	p-value
1	2010	Before FFP	24	6.545	0.143	0.671	5.248	6.843	-0.136	0.418
		After FFP	24	6.682	0.102	0.477	6.470	6.893		
2	2011	Before FFP	24	5.773	0.113	0.528	5.538	6.007	-0.136	0.266
		After FFP	24	5.909	0.063	0.294	5.779	6.040		
3	2012	Before FFP	24	4.913	0.060	0.288	4.788	5.038	-0.043	0.575
		After FFP	24	4.957	0.435	0.209	4.866	5.047		

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