

The impact of the Africa Cup of Nations on European professional football

UEFA Research Grant Programme 2017/18 edition

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UEFA Research Grant Programme 2017/18 edition – Final report (MAR2018)

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Introductory statement

This project proposal was submitted for consideration to the UEFA Research Grant Jury in March, 2017. At that time, the Africa Cup of Nations (AFCON) regularly occurred on January, every two years, during the European football season itself. However, on 20 July 2017, the Confederation of African Football (CAF) Executive Commission approved to switch the competition from January to summer in a reunion in Rabat, Morocco. Besides an evaluation of the impact past editions of AFCON had on European football, this project's results may examine such reform.

¹ The first part of the title of the proposal (*A tale of clubs, leagues and countries: The impact of the Africa Cup of Nations on European professional football*) has been dropped as suggested by the Jury.

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Executive summary

The importance and interest of the research for football and UEFA

1. The Africa Cup of Nations (AFCON) provides an excellent opportunity to evaluate the impact that National football teams' tournaments have on domestic competitions.
2. The *Fédération Internationale de Football Association* (FIFA) included AFCON in its official calendar despite the fact that it took place during European football regular season.
3. The majority of Africa's elite football players play in Europe and this trend is increasing year by year².
4. Consequently, European clubs were deprived of their elite African players and were put at a competitive disadvantage that affected leagues' overall competitive balance.
5. As football's governing body within Europe, UEFA involves all stakeholders (leagues, clubs, players, supporters) in the decision-making process in European football matters, so UEFA must clearly be concerned by the well-being of clubs and leagues.
6. AFCON causes with each new edition controversies and complaints among UEFAs federations and clubs³. Accordingly, it seems quite relevant to offer analytical access to the question what can be done in order to balance the conflicting interest that derive from players' participation in AFCON.

² For example, at the 2000 AFCON edition co-hosted by Ghana and Nigeria, just over 50% of the players were signed to a European club. For the 2002 competition in Mali, this figure had increased to 66% and for the 2004 event in Tunisia it stood at 67%. Since the majority of Africa's elite football players play in Europe, the findings of this project are not only of interest to the Royal Spanish Football Federation (RFEF), but likely to other UEFA member association, making a clear contribution to the governance of European football.

³ AFCON was even a matter of the negotiation of the G14 group of top European clubs and UEFA in the last decade.

7. In addition, the national associations play a vital role in balancing the various and frequently conflicting interests regarding football⁴.
8. No empirical evidence currently exists evaluating the effect of player absence on football play performance.
9. The here proposed analysis of the impact of player absence on teams and leagues may provide help to make recommendations in terms of the scheduling of both national and domestic competitions and league policies about player absence.
10. This project analyses the potential effects of past AFCON editions scheduling on both teams and leagues outcomes to identify a specific league and team effect of African players' absence⁵.
11. Since the rate of participation is not equal, players' participation in AFCON may favour one team over another, and so leagues' standing may be also affected.
12. Data has been collected from six European leagues (*Fußball-Bundesliga, Premier League, La Liga, Ligue 1, Serie A* and *Primeira Liga*.) that accounts for almost 80% of total participation of African players playing in Europe in last AFCON edition (2017). The explanatory variables include an indicator of African players' participation in AFCON and a set of relevant controls.
13. The approach of this project is both new and innovative. The general methodology involves a regression analysis at team and league level encompassing the last eight AFCON editions to test for possible effects (pros and cons) on both teams' performance and leagues' competitive balance.
14. The results indicate that European leagues are differentially impacted by AFCON. It can be conclude that European leagues' competitive balance appears to increase during the AFCON tournament although impact varies by league.
15. Mainly, teams that send more players to AFCON rosters are disadvantaged. However, this result loses significance when corrected by players' abilities and it is not consistent across leagues.
16. In any case, cautionary attention should be paid to the risk of injury associated with participation in international top-level tournaments, such as AFCON.

⁴ The national associations have a vital role to play in governance as coalitions of the many participating stakeholders. They must then balance the various and frequently conflicting interests regarding European football. So they need evidences to evaluate how they can successfully combine the various interests.

⁵ An additional and ongoing concern is the risk of injury to players at AFON, and its potential subsequent impact on the player's club-team.

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1. Introduction: The context of the research and its relevance for UEFA

1.1. An issue of major concern to European football

This project focuses on one of the main concerns of European football and a long-running conflict between Africa and Europe. The fact that National teams participating in international competitions⁶ draw their players from club teams is nowadays one of the big complaints about professional football (Murphy, 2000). This practice may generate pros and cons in terms of impacts on both domestic competitions in general and football clubs, which are deprived of their elite players, in particular. Furthermore, it clearly affects the relation between national, cross-national and even international (worldwide) governing bodies of football, and inevitably is causing some internal debate within European football⁷. In any case, both the overlap of National Teams competitions with domestic (clubs) competitions and the release of players to national teams are current problems European football that should be faced. A better coordination between the interests of professional leagues and both national and international football federations, and even a single set of dates (calendar) that guarantees the participation of professional players in their respective national teams and protects the interests of both professional clubs and leagues at the same time, may offer a nice solution. Notwithstanding, there is almost a complete absence of any literature that examines this issue in the case of football. As far as I know there is no empirical evidence on the impact of National teams' tournaments on domestic football competitions in Europe. An evaluation of the impacts (if any) this type of international competitions may generate on professional football leagues could shed more light on the previously mentioned debate between different football governing bodies.

⁶ Including the FIFA World Cup, the UEFA European Championship and the Africa Cup of Nations, among others.

⁷ It should be noted that professional football leagues have no competences in international competitions which are organized by either the continental federations (UEFA in the European case) or the international governing body of football (FIFA).

1.2. A case study of AFCON

Specifically, this project aims to evaluate the impact of the Africa Cup of Nations (AFCON) on European professional football. AFCON causes with each new edition controversies and complaints among UEFAs federations and clubs. The particular interesting issue is that AFCON regularly occurred on January⁸ every two years⁹, during the European football season itself, and took elite African players out of top European teams/leagues for up to six weeks.

Notwithstanding, it should be noted that AFCON 2019 is scheduled to be held in June and July 2019, as per the decision of the CAF Executive Committee on 20 July 2017 to move the Africa Cup of Nations from January/February to June/July for the first time. It will also be the first AFCON tournament expanded from 16 to 24 teams. Even though this may limit future relevance of this study, AFCON is, in any case, expected to affect, to some extent, European football and to have an externality effect on European domestic leagues (natural level of competitive balance, competitive disadvantage for teams, injury risk...). Moreover, statistical data on African players past involvement in European leagues would be relevant anyway.

Regardless, this project is a timely research project and, at least, part of the motivation for AFCON new schedule and expansion is due to the concerns of European leagues and teams raised in this report. Moving the AFCON tournament to the summer though has presented problems because there is concern about typically rainy weather conditions during the summer months. This, combined with the expansion of the tournament to 24 teams, has caused some concern that many of the nations involved in AFCON would be unable to properly host the tournament. Therefore, there has been discussion of moving the tournament outside of Africa to other continent – for example the United States (US) or China. If findings from this research project show that it is really not having that big of an impact on season outcomes in European leagues, then maybe the governing bodies would decide it is not a big issue for the AFCON to take place in January and February and keep the tournament as it has been historically.

⁸ *Why on January?* – Maybe to avoid overlapping with other FIFA tournaments. Summer months are plenty of international football events.

⁹ *Why every two years when Europe and South America hold their championship every four?* – Maybe because most of the African national teams do not aim for playing FIFA World Cup, so it seems to be necessary for them to frequently compete with other African teams.

The ultimate question is then to assess the pros and cons of AFCON in terms of impacts on European football, and to provide arguments for supporting (or not) last approved changes on AFCON.

Of course, it can be always argued that European clubs and leagues were aware of AFCON schedule and the potential effects of signing African players. However, it is a fact that the migration of African players to Europe has accelerated significantly since the early to mid-1990s (Darby, 2001) and so the presence of African players in European leagues has enjoyed a boost in recent years¹⁰. European leagues have realized that they can increase their total amount of talent, and hence their attractiveness to broadcasters, by signing star players from Africa. In this period, those countries that had a significant colonial presence in Africa, particularly France and Portugal, were the main beneficiaries of African football talent. Therefore, in Europe, not only the teams but the leagues as well have incentives to compete for African talent¹¹.

Finally, AFCON is important in its own right – just as the UEFA European Championship - and it is necessary for promoting and developing African football¹².

All in all, it seems quite relevant to offer an answer to the question what can be done in order to balance the conflicting interest that derive from players' participation in AFCON. In this regard, this project's results may show the real extent of the debate and provide help in any decision-making process on this issue. In any case, a cooperative relationship between UEFA and CAF seems to be necessary to benefit football in both continents.

2. The questions and hypotheses to be addressed by the project

2.1. A core research question

The core question this project will address is whether a better coordination between National team's tournaments and European domestic leagues is really needed.

¹⁰ Darby et al. (2007) reported a dramatic increase in the migration of African footballers to Europe in the last years. By the start of the millennium the number of Africans playing in Europe's 1st and 2nd Division leagues had reached 770 players (Ricci, 2000).

¹¹ Leagues cannot compete for players in a direct way, since players are hired by teams. Hence, a league wishing to attract top players must provide the incentives for domestic teams to hire them, and then, must protect clubs' interests.

¹² Sport and particularly football has long been central to nation building and instilling sense of national pride throughout the African continent. Without AFCON, African national teams would play fewer official games, which means fewer opportunities for training for the FIFA World Cup or the Olympics.

More specifically, this project tries to shed more light on this debate by evaluating the pros and cons in terms of impact on European football¹³ of last eight editions of AFCON.

2.2. At the league level: What is the effect and extent of AFCON on European professional leagues?

As stated before, a purpose of this project is to evaluate whether AFCON have any effect on European leagues. Thus, it will be focus on the African tournament and the implications for competitive balance. In line with Hoehn and Szymanski (1999), the question is whether participation in AFCON might affect European leagues' overall competitive balance.

Policy implications from findings about AFCON impact (if any) on European leagues' competitive balance can be drawn according to Groot (2009). The key idea in Groot (2009) is the natural level of competitive balance in a sport. He claims that lower natural levels of competitive balance justifies greater levels of intervention by governing bodies to aid competitive balance. Sports league associations – notably those in the US, but also recently the UEFA in its communications with the European Commission – have used the argument for maintaining competitive balance to get a special status under antitrust law (Groot, 2009).

2.3. At the team level: What are the consequences (in terms of competitive disadvantage and risk of injury) of African players' participation in AFCON?

In particular, this project asks whether European teams that supply a greater number of players to AFCON are put at a competitive disadvantage. Since the rate of participation is not equal, players' participation in AFCON might favour one team over another. On the other hand, positive impacts are also considered in the assessment. As discussed in Longley (2012), *“the excitement and aura that surround many international events can be exhilarating and inspiring, and these psychic benefits may have residual positive effects on the player after his return to domestic competition.”*

Different team's performance indicators are evaluated during AFCON to estimate any relevant impact. In addition, the risk of injury to players at AFCON and its potential subsequent impact on the players' team is also examined.

¹³ Both leagues and teams outcomes during AFCON are analysed to identify a specific team and league effects of African players' absence.

3. State of knowledge and literature review

Even though it is true that the role of scheduling in tournament setting has been discussed in different types of contests, as far as I know, apart from Longley (2012) and Cairney et al. (2015) - both focusing on Hockey - , there is almost a complete absence of any literature that examines the impact of National teams' tournaments on domestic leagues in the case of football. This project estimates, somehow, the schedule effect related to the period of time that is associated with AFCON on European leagues' competitive balance.

Competitive balance has been one of the most studied issues in sports economics over the last decades. The existing literature in the area is vast and spans different sub-areas. However, it produces conflicting predictions concerning the relevance of competitive balance¹⁴. Notwithstanding, competitive balance has been often seen as a key component of sports leagues. An excessively imbalanced competition might have a negative impact on both demand and fan interest (Késenne, 2006; Zimbalist, 2003), and may lead a league to difficulties - reorganization of top clubs into a separate competition, bankruptcy of backwards teams... (Michie and Oughton, 2004).

Previous studies on competitive balance in football reveal important differences in competitive balance across leagues. Some studies detect no significant changes in competitive balance (Feddersen, 2006; Groot, 2008; Koning, 2000; Szymanski, 2001). Others contain evidence of a decline in competitive balance in some leagues (Grossens, 2006; Michie and Oughton, 2004). And many analyze the impact of specific factors on competitive balance in football leagues (Buzzacchi et al., 2001; Noll, 2002; Haugen, 2008; Hall et al., 2002; Groot, 2008; Andreff and Bourg, 2006). Finally, Palomino and Rigotti (2000) consider a multi-period situation in which the demand for sport depends on the aggregate talent level, competitive balance and the effort produced by teams. However, no research exists analysing changes in competitive balance in domestic leagues that can be attributed to the release of players to national teams.

As for the potential effects of past AFCON editions scheduling on football teams' outcomes, the empirical evidence is extremely limited. Apart from Krumer and Lechner (2018), who uses information on schedule-related variables in international

¹⁴ Fort and Maxcy (2003) summarize the literature on competitive balance and Humphreys (2002) discusses alternative measures of competitive balance in sports leagues.

competitions such as the months in which the AFCON took place when explaining teams' performance in the German Bundesliga, no other study has been found examining this particular issue. From a more general perspective, the effect of the schedule on the performance of groups in competitive environments has been previously investigated in the economics literature (Palacios-Huerta, 2014).

Apart from an extensive medical, physiological, and psychological literature assessing the exposure of players to injury risk during football matches in relation to selected factors¹⁵, there is a lack of empirical economic research of the risk of injury to football players at international tournaments and its potential subsequent impact on the players' team.

In terms of policy implications from findings about AFCON impact (if any) on European leagues' competitive balance, and relating to the governance and the control of club competition in European football, Holt (2006), that focuses on the structure and control of football competition in Europe, could be useful.

4. A review of the proposed research (design, measurement approach and assumptions about the research topic)

4.1. An overview of the methodology to accomplish the goals

This project takes an econometric approach to evaluate whether AFCON have any effect on the European professional football. Both pros and cons in terms of impacts at both the teams and league levels are assessed. The methodological approach used here follows Longley (2012) that requires combining data from different seasons together, to maximize sample size for the analysis. The empirical model is estimated as a panel data set, with 33,436 observations, one for each of the 201 different analysed European clubs - from six different top European leagues - in each fixture of the eight seasons that occurs at the same time as each of the considered eight AFCON editions takes place.

4.1.1. Outline of the model to be tested

- In the case of leagues' competitive balance, the model presented in this project estimates how the number of AFCON players in a league is associated with

¹⁵ Bahr and Holme (2003) outlines some methodological issues of particular importance when studying risk factors for sports injuries.

competitive balance in that league. First, some key indicators - within-season competitive balance measures – are calculated at the league level. Then the two competitive balance measures for each league are regressed on a set of covariates including a control for AFCON scheduling.

- At the team level, a set of indicators of teams' performance in a particular season of a considered league is defined. Each team's performance measure will be regressed on a series of control variables, along with a variable measuring the number of African players playing AFCON.

- Finally, an additional empirical exercise is carried out to investigate whether participation in AFCON has potential implications on the risk of injury to players. Player injuries will be proxied by the total days lost of injury (time overdue to injury) by each analysed team in a particular season. Then, it will be regressed on a set of covariates including controls for AFCON participation.

4.2. The data, sample frame and size

The majority of Africa's elite football players play in Europe and this trend is increasing year by year. For example, at the 2000 AFCON edition co-hosted by Ghana and Nigeria, just over 50% of the players were signed to a European club. For the 2002 competition in Mali, this figure had increased to 66% and for the 2004 event in Tunisia it stood at 67%.

The focus of this project is on the "big five" European leagues: (German) *Fußball-Bundesliga*, (English) *Premier League* - EPL, (Spanish) *La Liga*, (French) *Ligue 1* and (Italian) *Serie A*. Additionally I also consider evidence from the Portuguese *Primeira Liga*. These six Europeans competitions accounts for almost 80% of total participation of African players playing in Europe in the last AFCON edition (2017).

Therefore, data and information from clubs and African players from all these leagues have been collected for the following AFCON editions: 2004 - *Tunisia*, 2006 - *Egypt*, 2008 - *Ghana*, 2010 - *Angola*, 2012 – *Equatorial Guinea and Gabon*, 2013 – *South Africa*, 2015 – *Equatorial Guinea* and 2017 – *Gabon*.

According to the submitted proposal, it was planned to contact CAF to ask for collaboration on data collection. After failing several times trying to contact them through the website and email - it seems they were in a major process of change at the governance level -, alternative source were considered to collect all the required data and information. See following the full list.

- a. CAF – Home>Competitions; <http://www.cafonline.com/en-us/competitions.aspx>
- b. FootballSquads¹⁶; <http://www.footballsquads.co.uk/index.html>
- c. BDFutbol¹⁷; <http://www.bdfutbol.com/en/index.html>
- d. Transfermarkt¹⁸; <https://www.transfermarkt.com/>
- e. PhysioRoom¹⁹; <https://www.physioroom.com/>

The total number of different African players in the considered European leagues playing any AFCON edition during the period 2004-2017 was 488.

During the sample period, there were 201 different European clubs competing in the considered leagues.

As result, the sample frame includes all the matches in these European leagues from the 2003-2004 season up to the 2016-2017 season. This accounts for a total of 1,740 rounds and more than 33,400 games.

4.3. Descriptive analysis

Those six European leagues include between the 23% and 31% of the total of African players playing AFCON (mean is 26%). However, a descriptive analysis of the data may first reveal that participation in AFCON is not uniform across European leagues and teams.

The presence of African players playing any AFCON edition during the sample period (2004-2017) in *Fußball-Bundesliga*, *La Liga*, *Primeira Liga* and *Serie A* was quite similar - it ranges between 1 and 16 players depending on the league and the season – with a mean over the sample period of around 8 African players. However, the *Premier League* and *Ligue1* - that accounts for more than 46% of African players playing in the six considered leagues – show a completely different story. The average of the per-season number of AFCON players in EPL reaches near 20, and it is 49 in the

¹⁶ “Featuring comprehensive current and historical squad details for clubs and national teams from all across the world.” Source of Material is <http://www.footballsquads.com>. Material: © FootballSquads.com, 1999 - 2017, All Rights Reserved.

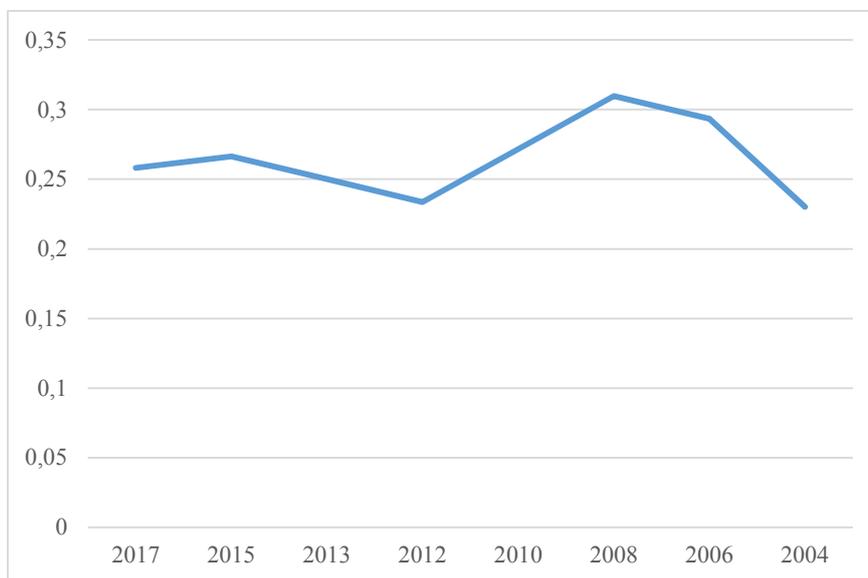
¹⁷ BDFutbol is an independent website dedicated to the recopilation of data and statistics of football. Source of Material is <http://www.bdfutbol.com>. Material: Historical Soccer Database © 2008-2017 | v12.1

¹⁸ Source of Material is <https://www.transfermarkt.com>. Material: © Transfermarkt GmbH & Co. KG 2000-2017, All Rights Reserved.

¹⁹ © Copyright PhysioRoom.com 2018. All rights reserved.

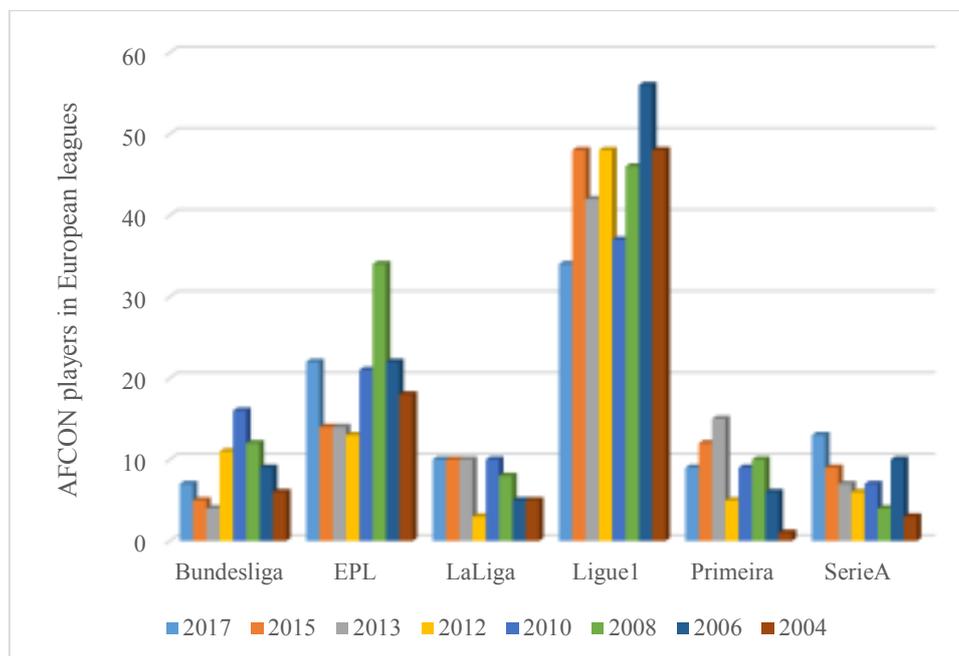
case of the *Ligue 1*. Within a particular league, significant differences among AFCON editions are observed (Table 1).

Figure 1. Participation of African players playing in Europe in last eight AFCON editions



Source: Own elaboration (UEFA RGP 2017/18)

Figure 2. Number of African players playing in the six European leagues in last eight AFCON editions



Source: Own elaboration (UEFA RGP 2017/18)

Table 1 provides information on the participation in European leagues of African players over the eight AFCON editions under study. On average, about 96.75 African players playing any of the analysed AFCON editions participated in the six examined

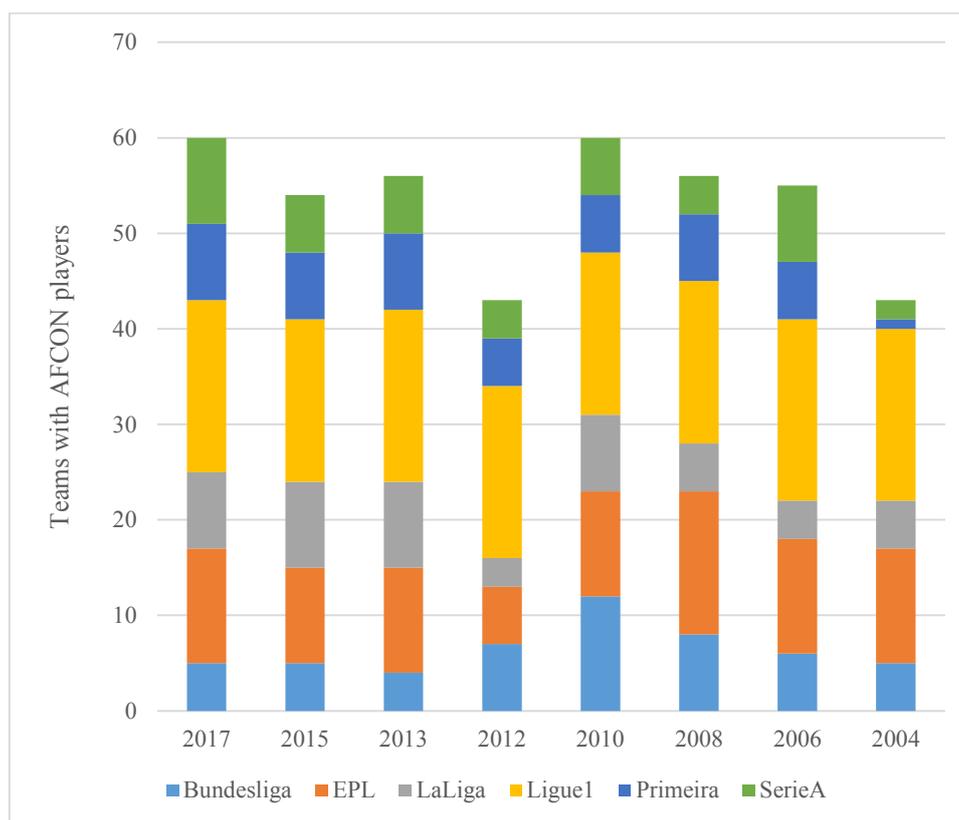
European Leagues, representing about 26% percent of total African players in a particular AFCON edition.

Table 1. AFCON players participation across European teams, 2004-2017

	2017	2015	2013	2012	2010	2008	2006	2004
<i>Bundesliga</i>	7	5	4	11	16	12	9	6
<i>EPL</i>	22	14	14	13	21	34	22	18
<i>LaLiga</i>	10	10	10	3	10	8	5	5
<i>Ligue1</i>	34	48	42	48	37	46	56	48
<i>Primeira</i>	9	12	15	5	9	10	6	1
<i>SerieA</i>	13	9	7	6	7	4	10	3
<i>six-leagues</i>	95	98	92	86	100	114	108	81

Source: Own elaboration (UEFA RGP 2017/18)

Figure 3. European teams with African players playing in last eight AFCON editions



Source: Own elaboration (UEFA RGP 2017/18)

At the club level, the number of teams with AFCON players differ a lot among leagues. On average, almost 89% of the French teams in *Ligue 1* had an African player playing any AFCON edition during the sample period. However, this percentage dramatically falls to 29% in the case of the Italian *Serie A*. A question to be answered in

this project would be then, whether such differences in participation impact teams' performance and league's competitive balance, as the described statistics seem to predict.

Table 2. Performance of teams with AFCON players in *Fußball-Bundesliga*

season	league of	best	worst	mean	median	SD
2003-2004	18	5	15	10.80	13.00	4.49
2005-2006	18	3	17	11.00	11.50	5.10
2007-2008	18	2	18	10.00	9.50	6.02
2009-2010	18	2	17	9.50	9.50	4.81
2011-2012	18	6	17	11.43	12.00	3.87
2012-2013	18	5	15	10.25	10.50	4.27
2014-2015	18	6	15	10.20	10.00	3.83
2016-2017	18	3	17	8.80	8.00	5.26

Source: Own elaboration (UEFA RGP 2017/18)

Table 3. Performance of teams with AFCON players in EPL

season	league of	best	worst	mean	median	SD
2003-2004	20	1	20	9.67	9.00	6.83
2005-2006	20	1	19	10.25	10.50	5.51
2007-2008	20	2	19	10.67	11.00	5.67
2009-2010	20	1	20	11.09	12.00	6.80
2011-2012	20	1	17	7.83	5.50	6.59
2012-2013	20	2	20	10.36	10.00	6.50
2014-2015	20	2	15	9.10	9.50	4.12
2016-2017	20	4	20	11.33	11.50	5.30

Source: Own elaboration (UEFA RGP 2017/18)

Table 4. Performance of teams with AFCON players in *La Liga*

season	league of	best	worst	mean	median	SD
2003-2004	20	1	17	9.00	11.00	6.78
2005-2006	20	1	17	9.25	9.50	7.93
2007-2008	20	1	12	5.25	4.00	4.79
2009-2010	20	1	18	8.88	8.00	6.75
2011-2012	20	2	17	11.33	15.00	8.14
2012-2013	20	4	20	11.56	13.00	5.41
2014-2015	20	4	20	12.00	13.00	5.70
2016-2017	20	3	17	8.80	8.00	5.26

Source: Own elaboration (UEFA RGP 2017/18)

Table 5. Performance of teams with AFCON players in *Ligue 1*

season	league of	best	worst	mean	median	SD
2003-2004	20	1	20	10.00	9.50	6.03
2005-2006	20	1	20	10.53	11.00	6.08
2007-2008	20	1	20	10.12	9.00	6.27
2009-2010	20	1	20	10.24	10.00	6.02
2011-2012	20	1	20	9.78	9.50	5.79
2012-2013	20	1	20	9.61	9.50	5.54
2014-2015	20	1	19	10.00	10.00	5.70
2016-2017	20	1	20	10.94	11.50	6.08

Source: Own elaboration (UEFA RGP 2017/18)

Table 6. Performance of teams with AFCON players in *Primeira Liga*

season	league of	best	worst	mean	median	SD
2003-2004	18	13	13	13.00	13.00	-
2005-2006	18	1	17	8.17	7.00	7.05
2007-2008	16	1	16	9.29	9.00	5.53
2009-2010	16	1	12	6.00	6.00	4.20
2011-2012	16	1	12	5.80	6.00	4.21
2012-2013	16	1	14	8.75	9.50	4.40
2014-2015	18	2	17	9.29	9.00	5.74
2016-2017	18	2	16	9.25	9.00	5.44

Source: Own elaboration (UEFA RGP 2017/18)

Table 7. Performance of teams with AFCON players in *Serie A*

season	league of	best	worst	mean	median	SD
2003-2004	18	15	16	15.50	15.50	0.71
2005-2006	20	1	19	8.25	6.00	6.78
2007-2008	20	2	12	7.75	8.50	4.35
2009-2010	20	1	19	10.86	12.00	5.76
2011-2012	20	3	17	9.75	9.50	6.40
2012-2013	20	1	12	5.33	4.50	3.83
2014-2015	20	2	20	10.33	9.50	6.89
2016-2017	20	1	17	7.78	5.00	6.18

Source: Own elaboration (UEFA RGP 2017/18)

Table 8. Number of African players playing in the six European leagues in last eight AFCON editions

	2017	2015	2013	2012	2010	2008	2006	2004
<i>Algeria</i>	12	12	11		9			5
<i>Angola</i>			2	3	5	6	2	
<i>Benin</i>					2	3		2
<i>Burkina F.</i>	3	5	7	6	7			3
<i>Cameroon</i>	5	8			13	15	11	12
<i>C.Verde</i>		7	8					
<i>Congo</i>		2						
<i>DR.Congo</i>	4	4	2				2	4
<i>Iv.Coast</i>	14	13	13	13	14	18	17	
<i>Eq.Guinea</i>		1		1				
<i>Egypt</i>	5				1	2	2	1
<i>Gabon</i>	3	8		6	4			
<i>Ghana</i>	7	7	8	10	8	9	3	
<i>Guinea</i>		5		4		5	9	4
<i>Guinea-B.</i>	4							
<i>Libya</i>				1			1	
<i>Mali</i>	9	7	13	11	13	9		8
<i>Morocco</i>	10		12	9		6	10	9
<i>Namibia</i>						1		
<i>Niger</i>				1				
<i>Nigeria</i>			5		13	12	11	8
<i>Senegal</i>	13	13		14		16	20	16
<i>S.Africa</i>						4	2	3
<i>Togo</i>	1		6		6		4	
<i>Tunisia</i>	4	5	3	7	4	7	10	5
<i>Uganda</i>	1							
<i>Zambia</i>		1	2		1	1	3	
<i>Zimbabwe</i>							1	1

Source: Own elaboration (UEFA RGP 2017/18)

As hypothesized earlier, African players' participation in AFCON is not even across teams within a particular league. For example, the greatest number of AFCON players in the *Fußball-Bundesliga* is produced by bottom-half teams - as measured by position in league table at the end of the season. A completely different picture emerges when looking at other European competitions, like the Spanish *La Liga* or the Italian *Serie A*. This disparity is particularly evident in some seasons, indicating substantial variation through time (among seasons). Tables 2-7 describe the performance – in terms

of final position in league table – of all the analysed European clubs with AFCON players during the sample period. This preliminary descriptive analysis gives a good sense about the initial estimate of AFCON in the domestic leagues considered. Accordingly, variation in position in league table of teams throughout a particular season will be considered as an indicator of teams' performance to estimate possible effect of African players' absence later in the research.

As for the players, data on 488 different AFCON players playing in the six considered European leagues during the period 2004-2017 has been collected. Table 8 reports the number of players with African roots and the countries they represent. It must be noticed, that, on average, 90% of African National teams participating in any of the considered eight AFCON editions called African players up from the six analysed European leagues.

Regarding the country of origin, the distribution is quite heterogeneous, with about 25% of Senegalese (13%) and Ivorian (12%) players. This can be explained by the fact that both countries were French colonies until the 1960s and the huge number of African players playing in *Ligue 1*. Notwithstanding, running parallel to this colonial pattern has been a much more diffuse and random movement of African players to a range of leagues throughout Europe. Accordingly, the African players' nationality will be included as an explanatory variable in the quantitative conditional analysis.

As explained, the empirical model includes a covariate measuring the number of African players playing AFCON. This variable is corrected by a proxy of these players' abilities to give an idea about the quality of players that a team is typically losing.

To approximate players' abilities, this project uses players' monetary values obtained from a popular German soccer website, Transfermarkt²⁰, which is a reliable data source that provides data on players' market values. A quick look at the data from the last AFCON edition²¹ reveals that the market value of each considered African player shows a high degree of variation; from the most of €50 million of Senegalese Sadio Mané (Liverpool FC – EPL) to the €503 thousand of Bissau-Guinean Bocundji Ca (SC Bastia – *Ligue 1*). So expected impact of players' absence may differ among African players.

²⁰ Source of Material is <https://www.transfermarkt.com>. Material: © Transfermarkt GmbH & Co. KG 2000-2017, All Rights Reserved.

²¹ <https://www.transfermarkt.co.uk/afrika-cup-2017/startseite/pokalwettbewerb/AC17>

4.4. Key variables and indicators

The ultimate goal is to evaluate the impact (if any) AFCON has on European football. Two different during-AFCON effects are distinguished: specific team effects and league effects. For the quantitative work, the analysed key indicators used to measure both leagues' and teams' performance are in line with those outlined in Longley (2012), Cairney et al. (2015) and Krumer and Lechner (2018).

In the case of leagues, the model presented in this project aims to estimate how the number of AFCON players in a league is associated with competitive balance in that league. Then, a set of possible outcome variables - within-season competitive balance measures – are calculated at the league level, including, as in as in Pawlowski et al. (2010), a Herfindahl-Hirschman index of competitive balance and a concentration ratio.

- a. The *concentration ration* is calculated for the top five clubs (CR5) – these clubs regularly play in Pan-European competitions – as the share points won by these five clubs compared with the entire league. Because this measure is sensitive to league changes, the ratio is modified to the ratio of the observable concentration ratio to the concentration ratio of a perfectly balanced league.

$$CR5 = \frac{\sum_{i=1}^N s_i}{5/N} 100 \quad (1)$$

- b. The *Herfindahl-Hirschman index* of competitive balance (HHI) is calculated as the sum of the quadratic share of points won by each club in a league with N teams (modified for interdivisional comparability)

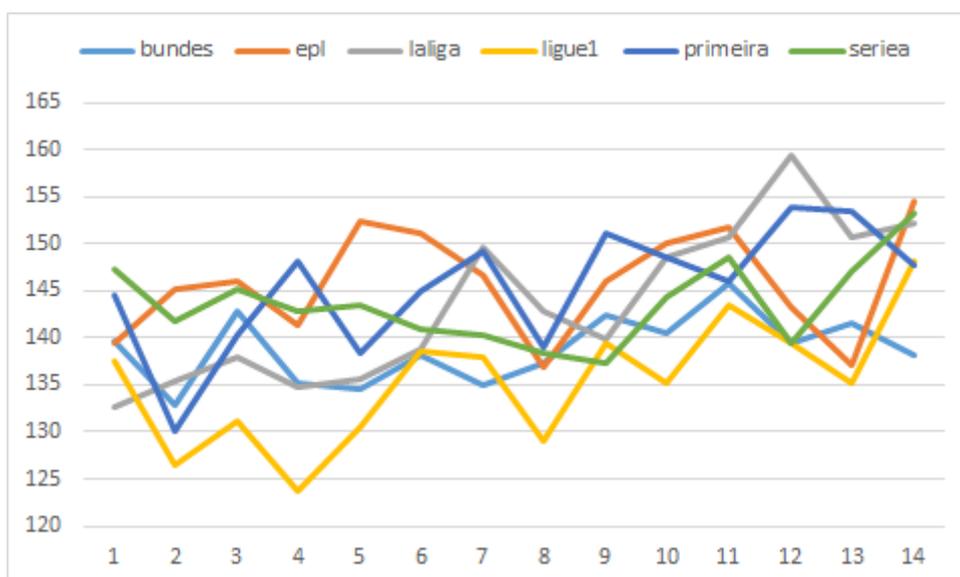
$$HHI = \frac{\sum_{i=1}^N s_i^2}{1/N} 100 \quad (2)$$

These two measures are calculated for each considered league: at the end of a particular season (season 2003-2004 to season 2016-2017); and in a round-by-round basis - in season competitive balance - (for all the seasons with AFCON edition). For each of these measures, a decline in competitive balance is reflected by an increase in the index.

The explanatory variables will include an indicator of African players' participation in AFCON and specific league controls (league dummy variables).

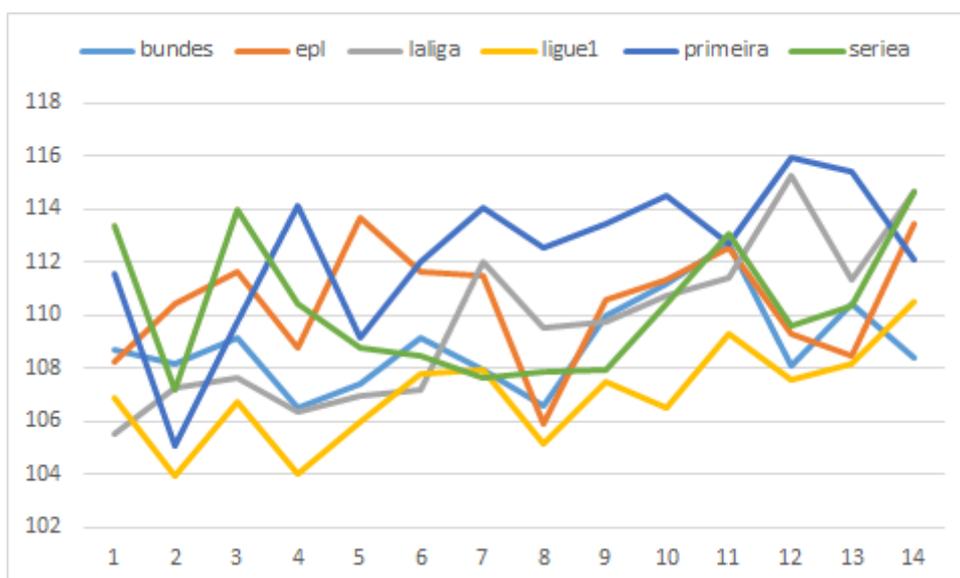
Figures 4-7 show substantial differences among leagues' within-season competitive balance measures (also in terms of in season competitive balance). A sharpened variation (fluctuation) for both measures exists throughout time (seasons). In general, a slight positive trend is observed in the long run for the ratios calculated at the end of each season when an expected decline in the index for in season competitive balance measures as a particular season goes by.

Figure 4. CR5 ratio (from season 2003-2004 to season 2016-2017)



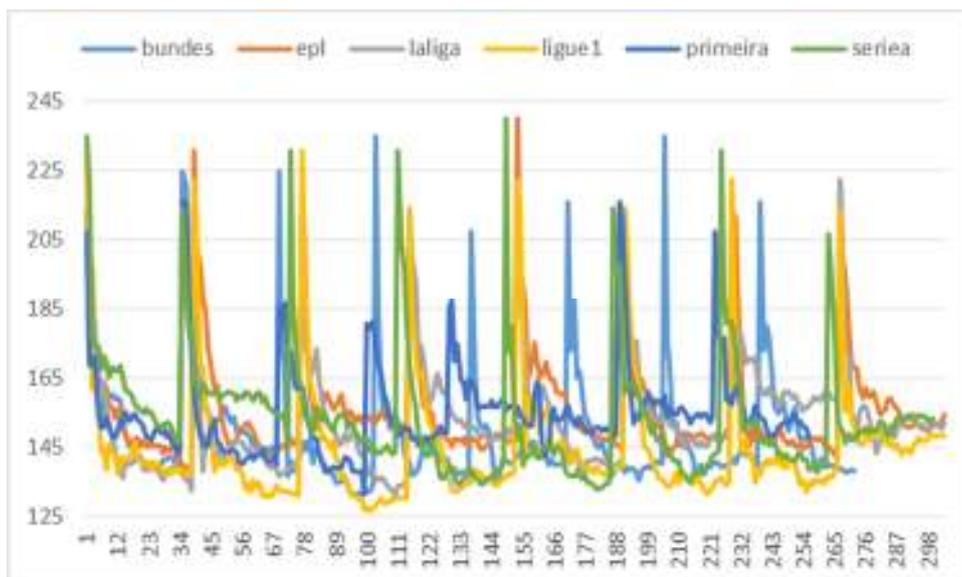
Source: Own elaboration (UEFA RGP 2017/18)

Figure 5. HHI ratio (from season 2003-2004 to season 2016-2017)



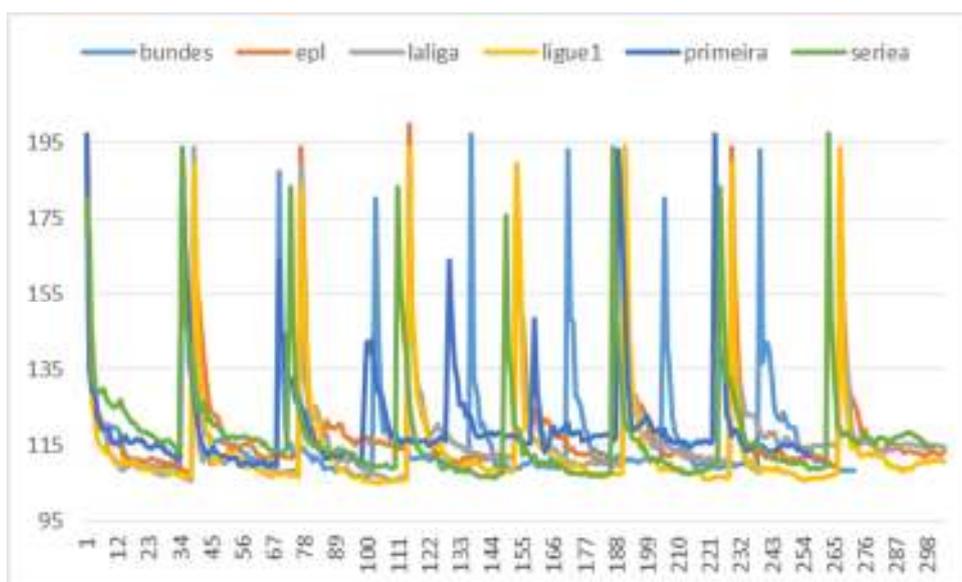
Source: Own elaboration (UEFA RGP 2017/18)

Figure 6. CR5 ratio in a *round by round* basis (from season 2003-2004 to season 2016-2017)



Source: Own elaboration (UEFA RGP 2017/18)

Figure 7. HHI ratio in a *round-by-round* basis (from season 2003-2004 to season 2016-2017)



Source: Own elaboration (UEFA RGP 2017/18)

Does having more AFCON players on the roster have a significant impact on an individual team’s performance? Estimating the impact of AFCON on competitive balance gives an incomplete picture of how AFCON influences European league teams. Some additional evidence will be found by regressing individual team’s performance indicators in a given season on variables potentially correlated with that team performance, including an indicator of African players’ participation in AFCON.

Therefore, a set of indicators of teams' performance in a particular season of a considered league is defined, including:

a. *league position*: to estimate possible effect of African players' absence I collected data on the position in league table of each team in every fixture of a particular season of the analysed leagues. Variation in this variable during AFCON is expected to be explained by African players' absence.

b. *points won*: to estimate the effect of AFCON on teams' performance, I code the (average) number of points per-game obtained by teams before, during and after AFCON.

This set of possible outcome variables at the level of a single club will provide evidence on whether teams that supply the most players to AFCON rosters are subsequently advantaged or disadvantaged. The empirical model will contain a dependent variable measuring each team's performance that will be regressed on a series of control variables, along with a variable measuring the number of African players playing AFCON (*AFCON players*). The set of covariates will account for the number of games played during AFCON²² and the number of different competitions played. It will also include league-effect controls (league dummy variables), the overall team quality, and the African players' nationality – weighted by the corresponding African national team performance within AFCON. Some key descriptive statistics are shown in Table 9.

a. *overall team quality*: Top European teams are expected to accumulate the most points during a particular season. Accordingly, the points a particular team has in round $t-1$ are included in the model as an explanatory variable (*ac.points*) for that team's performance in round t . Also, an index (*quality index*) for each team's participation in European competition through all the sample period – 1 point is awarded for each season participation in *UEFA Europa League* and 2 points for each season participation in *UEFA Champions League*; the index is

²² This would give an idea of how long of an absence from the European team were typically talking about when it comes to AFCON players.

just the total sum of points for all considered seasons - is used to proxy this variable.

b. *number of different competitions*: A dummy variable (*europe*) takes value 1 if the team plays a European competition, because such participation may create different allocation of efforts (for example, saving best players to more important European Cups matches, fatigue, or psychological momentum)

c. *AFCON players' market value*: As explained earlier in the report, to approximate AFCON players' abilities, players' monetary values are obtained from Transfermark. The variable AFCON market stands for each season, each player's estimated market value in million Euros.

Table 9. Key variables statistics (covariates at the team level)

	mean	std.dev.	min	max
<i>ac.points</i>	24.345	14.402	0	97
<i>quality index</i>	7.045	8.467	0	28
<i>europe</i>	0.357	0.479	0	1
<i>AFCON players</i>	0.165	0.621	0	7
<i>AFCON market</i>	0.897	4.780	0	107

Source: Own elaboration (UEFA RGP 2017/18)

Table 10. Key variables statistics (by season - EPL teams' total days lost of injury)

	observations	mean	std.dev.	min	max
<i>total days lost</i>	260	27.146	14.342	7	85
<i>total days lost (2017)</i>	20	57.55	16.031	35	85

Source: Own elaboration (UEFA RGP 2017/18)

In order to examine the risk of injury to players at AFCON and its potential subsequent impact on the players' team, the total days lost of injury is considered as a proxy of the injuries-level suffered by a single club in a particular season²³. The analysis of such a variable (Table 10) is expected to provide evidence on whether teams that supply the most players to AFCON rosters are subsequently advantaged or disadvantaged.

²³ Due to data availability, only the EPL is considered as case study here.

4.5. Ethical issues

I note that ethical approval is not required, and was not sought, for this research.

5. An overview of the main research findings

The quantitative conditional analysis is performed, as in Longley (2012), by a conventional regression analysis using panel data techniques will allow estimating changes (during AFCON) in leagues' competitive balance and teams' performance and risk of injury.

5.1. At the league level

Assuming that the teams that send more player to AFCON are relatively advantaged or disadvantaged, the differential impact across teams may have potential competitive balance implications. If the best-performing teams are those that tend to supply the most players to AFCON, the league's standings are expected to be compressed, with the best teams having their performance hampered relative to those teams that supply fewer players to AFCON. However, if the worst-performing teams are those that tend to supply the most players to AFCON, the opposite effect can also occur. Whether the final effect in terms of competitive balance would be beneficial or harmful to European football is unclear.

First, the two competitive balance measures (in logs) for each league, calculated at the end of a particular season, are regressed on a set of covariates including a control for league size, a trend (season) and a dummy (*AFCON*) that takes value 1 for those seasons with AFCON edition. Then, this dummy is replaced in the model specification by a variable that accounts for the number of African players (in logs) from a particular league that are drawn to playing AFCON (*AFCON players*). This variable is finally interacted with the corresponding league dummy.

- (i) It seems that (on average) those seasons with AFCON exhibit a lower competitive balance.
- (ii) Competitive balance seems to be negatively impacted by the number of African players drawn to playing AFCON.
- (iii) However, this does not happen in all analysed leagues.

(iv) AFCON seems to negatively affect competitive balance of EPL and Spanish *La Liga*.

(v) The effect is not clear for *Fußball-Bundesliga* and the Italian *Serie A*.

Table 11. Panel data regression (Random effects GLS regression)

Dependent variable is (log of) competitive balance measure for each considered league at the end of a particular season (season 2003-2004 to season 2016-2017)

	CR5			HHI		
<i>league size</i>	-0.005 (0.263)	-0.005 (0.281)	-0.004 (0.120)	-0.005** (0.032)	-0.05** (0.035)	-0.004*** (0.000)
<i>trend</i>	0.005*** (0.000)	0.005*** (0.000)	0.005*** (0.000)	0.003*** (0.000)	0.003*** (0.000)	0.002*** (0.000)
<i>AFCON edition</i>	0.016** (0.043)			0.008** (0.041)		
<i>AFCON players</i>	0.007** (0.022)			0.003** (0.027)		
<i>*bundesliga</i>	-0.010 (0.203)			-0.007* (0.080)		
<i>*epl</i>	0.018*** (0.001)			0.009*** (0.001)		
<i>*laliga</i>	0.018** (0.026)			0.010** (0.014)		
<i>*ligue1</i>	-0.005 (0.231)			-0.002 (0.255)		
<i>*primeira</i>	0.010 (0.275)			0.004 (0.336)		
<i>*seriea</i>	0.012 (0.149)			0.010** (0.012)		
<i>league dummies</i>	YES	YES	NO	YES	YES	NO
<i>R²</i>	0.330	0.340	0.264	0.317	0.323	0.300
<i>N</i>	84	84	84	84	84	84

Notes: *p*-value within parentheses. * Significant at 10%; ** significant at 5%; ***significant at 1%

Source: Own elaboration (UEFA RGP 2017/18)

Next, each of the two competitive balance measures (in logs) for each league - calculated in a round-by-round basis (through a particular season and for all the season with AFCON edition) - is regressed on a set of covariates including a trend (round) and

a dummy (*AFCON fixture*) that takes value 1 for those rounds in a domestic league that are played at the same time AFCON occurs. Then, this dummy is replaced in the model specification by a variable that accounts for the number of African players (in logs) from a particular league that are drawn to playing AFCON (*AFCON players*). This variable is finally interacted with the corresponding league dummy.

Table 12. Panel data regression (Random effects GLS regression)

Dependent variable is (log of) competitive balance measure for each considered league in a round by round basis (seasons with AFCON editions)

	CR5			HHI		
<i>trend</i>	-0.006*** (0.000)	-0.006*** (0.000)	-0.006*** (0.000)	-0.006*** (0.000)	-0.006*** (0.000)	-0.006*** (0.000)
<i>AFCON fixture</i>	-0.031*** (0.000)			-0.035*** (0.000)		
<i>AFCON players</i>		-0.011*** (0.000)		-0.012*** (0.000)		
<i>*bundesliga</i>			-0.004 (0.736)			-0.012 (0.324)
<i>*epl</i>			0.018** (0.016)			0.013 (0.125)
<i>*laliga</i>			0.024*** (0.000)			0.012*** (0.005)
<i>*ligue1</i>			-0.024*** (0.001)			-0.009 (0.321)
<i>*primeira</i>			0.001 (0.326)			0.001 (0.536)
<i>*seriea</i>			-0.003* (0.068)			-0.001 (0.678)
<i>season dummies</i>	YES	YES	YES	YES	YES	YES
<i>league dummies</i>	YES	YES	YES	YES	YES	YES
<i>R²</i>	0.462	0.460	0.465	0.426	0.423	0.412
<i>N</i>	1740	1740	1740	1740	1740	1740

Notes: *p*-value within parentheses. * Significant at 10%; ** significant at 5%; ***significant at 1%

Source: Own elaboration (UEFA RGP 2017/18)

(vi) It seems that (on average) competitive balance of European leagues increases during AFCON.

(vii) However, opposite (sign) effects can be found when looking at a particular league.

It should be noted that the variable measuring the number of AFCON players in a league could be picking up on some other relationship between AFCON players and leagues' competitive balance that has nothing to do with these players leaving their European teams to play in the AFCON tournament though. Therefore, another thing considered here is to compare competitive balance when the AFCON tournament is not taking place to competitive balance when the AFCON tournament is taking place for each league - which is the question this research project is really trying to answer. So, for each league, its pre-AFCON competitive balance, its post-AFCON competitive balance, and its during AFCON competitive balance averages across seasons are calculated. Then a simple test for difference in means between the three averages for each league is performed (the test null hypothesis is that there is no difference between the three periods' means).

The performed test for difference in means between the three competitive balance averages for each league (Table 13) shows that there is a statistically significant difference in competitive balance during the AFCON tournament. Moreover, the results remains the same when looking at each league case. This supports the findings suggested by the regression analysis.

Table 13. Test for difference in competitive balance means

	CR5-mean	CR5-std.dev.	HHI-mean	HHI-std.dev.
<i>pre-AFCON</i>	161.170	20.798	124.714	19.565
<i>during-AFCON</i>	146.675	7.424	112.410	3.448
<i>post-AFCON</i>	143.617	7.167	110.736	3.201
Prob > F	0.000		0.000	
Bartlett's test (Prob>chi2)	0.000		0.000	

Source: Own elaboration (UEFA RGP 2017/18)

All in all, it can be conclude that European leagues' competitive balance appears to increase during the AFCON tournament although impact varies by league.

If competitive balance has increased by teams with less resources being more willing to sign AFCON players, then the overall effect of AFCON players playing in

European leagues has been to make European leagues more competitive even if there is a small decline in competitive balance during the AFCON tournament. In fact, that is exactly what we would expect to see.

5.2. At the team level

European football teams with a greater number of African players participating in AFCON are expected to experience a relative change - either positive or negative - in performance during the AFCON competition itself. To empirically test this effect, the two indicators of teams' performance (*league position* and *points won*) are regressed on the set of covariates previously described (Table 14).

Table 14. Panel data regression (all leagues – all teams)
Dependent variable is an indicator of teams' performance

	league position		points won	
<i>ac.points</i>	0.072*** (0.000)	0.072*** (0.000)	0.006*** (0.000)	0.006*** (0.000)
<i>quality index</i>	0.345*** (0.000)	0.345*** (0.000)	0.034*** (0.000)	0.034*** (0.000)
<i>europe</i>	1.088*** (0.000)	1.080*** (0.000)	0.117*** (0.000)	0.116*** (0.000)
<i>AFCON players</i>	-0.096** (0.010)		-0.010*** (0.008)	
<i>AFCON market value</i>		0.015*** (0.002)		0.0003 (0.534)
<i>constant</i>	4.219 (0.000)	4.227 (0.000)	0.901 (0.000)	0.901 (0.000)
<i>league dummies</i>	YES	YES	YES	YES
<i>nationality dummies</i>	YES	YES	YES	YES
R²	0.435	0.435	0.427	0.427
N	33436	33436	33436	33436

Notes: *p*-value within parentheses. * Significant at 10%; ** significant at 5%; ***significant at 1%

Source: Own elaboration (UEFA RGP 2017/18)

(viii) Both indicators of teams' performance (*league position* and *points won*) seems to be negatively impacted by the number of African players drawn to playing AFCON.

(ix) However, this does not happen when corrected by players' abilities (*market value*).

(x) Surprisingly, in terms of AFCON players' market value, African players' absence seems to positively affect the position in league table of teams. This can be explained by top teams' (those with the players who had the highest market value) ability for replacing this players without affecting the overall team quality. In relative terms, these teams can be expected to improve their position on league table, even during AFCON.

(xi) The effect is not statistically significant in terms of the number of points per-game obtained by teams during AFCON.

Table 15. Panel data regression (by league)

Dependent variable is an indicator of teams' performance - *pointswon*

	bundesliga	epl	laliga	ligue1	primeira	seriea
<i>ac.points</i>	0.008*** (0.000)	0.006*** (0.000)	0.006*** (0.000)	0.006*** (0.000)	0.007*** (0.000)	0.006*** (0.000)
<i>quality index</i>	0.029*** (0.000)	0.036*** (0.000)	0.028*** (0.000)	0.027*** (0.000)	0.044*** (0.000)	0.040*** (0.000)
<i>europe</i>	0.135*** (0.000)	0.084*** (0.000)	0.155*** (0.000)	0.140*** (0.000)	-0.027 (0.190)	0.145*** (0.000)
<i>AFCON players</i>	-0.025 (0.195)	-0.016** (0.050)	0.016 (0.355)	-0.010** (0.044)	-0.003 (0.877)	-0.020 (0.227)
constant	0.930*** (0.000)	0.941*** (0.000)	0.932*** (0.000)	0.978*** (0.000)	0.907*** (0.000)	0.888*** (0.000)
nationality dummies	YES	YES	YES	YES	YES	YES
R²	0.332	0.486	0.445	0.283	0.542	0.486
N	4896	6080	6080	6080	4368	5932

Notes: *p*-value within parentheses. * Significant at 10%; ** significant at 5%; ***significant at 1%

Source: Own elaboration (UEFA RGP 2017/18)

Next, the model is estimated for each particular league (Tables 15 and 16), but focusing just on the potential effects on both indicators of teams' performance of AFCON players' absence.

(xii) Previous findings cannot be generalized in the same way to all analysed leagues.

(xiii) AFCON players' absence seems to negatively affect EPL and *Ligue 1* teams.

(xiv) The effect is not clear for the Italian *Serie A*.

Table 16. Panel data regression (by league)

Dependent variable is an indicator of teams' performance – *league position*

	bundesliga	epl	laliga	ligue1	primeira	seria
<i>ac.points</i>	0.089*** (0.000)	0.067*** (0.000)	0.072*** (0.000)	0.083*** (0.000)	0.070*** (0.000)	0.057*** (0.000)
<i>quality index</i>	0.269*** (0.000)	0.353*** (0.000)	0.300*** (0.000)	0.341*** (0.000)	0.336*** (0.000)	0.489*** (0.000)
<i>europe</i>	1.931*** (0.000)	0.991*** (0.000)	1.653*** (0.000)	1.835*** (0.000)	-0.032 (0.847)	-0.172 (0.324)
<i>AFCON players</i>	-0.340** (0.038)	-0.131* (0.075)	0.177 (0.304)	-0.181*** (0.000)	0.451 (0.730)	0.412** (0.023)
<i>constant</i>	4.800*** (0.000)	5.823*** (0.000)	5.376*** (0.000)	5.039*** (0.000)	5.182*** (0.000)	3.770*** (0.000)
<i>nationality dummies</i>	YES	YES	YES	YES	YES	YES
<i>R²</i>	0.401	0.530	0.466	0.376	0.510	0.3731
<i>N</i>	4896	6080	6080	6080	4368	5932

Notes: *p*-value within parentheses. * Significant at 10%; ** significant at 5%; ***significant at 1%

Source: Own elaboration (UEFA RGP 2017/18)

5.2.1. A robustness check

A more powerful test of the effect of number of African players participating in AFCON on teams' performance outcomes (in this context, also measured as the probability of winning a particular football match), is to use a probit model. In this model, the number of players participating in AFCON per team is used to predict the probability of winning a game during the AFCON tournament. Here the dependent variables takes value 1 if a particular team won its game and zero otherwise.

Table 17. Panel data regression (probit model²⁴)
 Dependent variable is the probability of winning a game

<i>ac.points</i>	0.002*** (0.000)	0.002*** (0.000)
<i>quality index</i>	0.033*** (0.000)	0.033*** (0.000)
<i>europe</i>	0.122*** (0.000)	0.121*** (0.000)
<i>AFCON players</i>	-0.026** (0.029)	
<i>AFCON market value</i>		-0.0006 (0.701)
<i>constant</i>	-0.685*** (0.000)	-0.686*** (0.000)
<i>league dummies</i>	YES	YES
<i>nationality dummies</i>	YES	YES
<i>N</i>	33436	33436

Notes: *p*-value within parentheses. * Significant at 10%; ** significant at 5%; ***significant at 1%

Source: Own elaboration (UEFA RGP 2017/18)

(xv) The results are reported in Table 17, and show that the European teams that have a greater number of AFCON players experiences a decline in the odds of winning a game during AFCON.

²⁴ A probit model is a type of regression where the dependent variable can take only two values, here to win or not a particular game. Suppose a response variable Y is binary, that is it can have only two possible outcomes which we will denote as 1 and 0. For example, Y may represent presence/absence of a certain condition, success/failure of some device, answer yes/no on a survey, etc. We also have a vector of regressors X , which are assumed to influence the outcome Y . Specifically, we assume that the model takes the form

$$Pr(Y = 1|X) = \Phi(X^T\beta) \quad (3)$$

where Pr denotes probability, and Φ is the Cumulative Distribution Function (CDF) of the standard normal distribution. The parameters β are typically estimated by maximum likelihood. It is possible to motivate the probit model as a latent variable model. Suppose there exists an auxiliary random variable

$$Y^* = X^T\beta + \varepsilon \quad (4)$$

where $\varepsilon \sim N(0, 1)$. Then, Y can be viewed as an indicator for whether this latent variable is positive.

$$Y = \begin{cases} 1; & Y^* > 0 \\ 0; & \text{otherwise} \end{cases} = \begin{cases} 1; & -\varepsilon < X^T\beta \\ 0; & \text{otherwise} \end{cases} \quad (5)$$

(xvi) However, this does not happen in all analysed leagues (Table 18).

(xvii) AFCON participation seems to reduce the probability of winning a game for those teams competing in *Fußball-Bundesliga*, EPL and French *Ligue 1*.

Table 18. Panel data regression (probit model)

Dependent variable is the probability of winning a game (by league)

	bundesliga	epl	laliga	ligue1	primeira	seria
<i>ac.points</i>	0.002 (0.188)	0.002* (0.082)	0.002** (0.036)	0.001 (0.279)	0.002 (0.110)	0.001 (0.225)
<i>quality index</i>	0.030*** (0.000)	0.033*** (0.000)	0.030*** (0.000)	0.025*** (0.000)	0.044*** (0.000)	0.037*** (0.000)
<i>europe</i>	0.141*** (0.004)	0.101** (0.026)	0.099** (0.042)	0.195*** (0.000)	-0.018 (0.764)	0.137 (0.004)
<i>AFCON players</i>	-0.099* (0.083)	-0.056** (0.032)	0.085 (0.109)	-0.026* (0.093)	0.070 (0.159)	-0.039 (0.433)
<i>constant</i>	-0.650*** (0.000)	-0.648*** (0.000)	-0.656*** (0.000)	-0.590 (0.000)	-0.702*** (0.000)	-0.709*** (0.000)
<i>nationality dummy</i>	YES	YES	YES	YES	YES	YES
<i>N</i>	4896	6080	6080	6080	4368	5932

Notes: *p*-value within parentheses. * Significant at 10%; ** significant at 5%; ***significant at 1%

Source: Own elaboration (UEFA RGP 2017/18)

5.2.2. A look at the risk of injury

Since AFCON regularly occurred during the European football season itself, one specific concern at the team level is that African players participating in AFCON have no time (or very little time) to physically and mentally recover from the international competition. They may become over-fatigued, making them more prone to injury or poor performance after they return to the European leagues. Also, participation in AFCON involves large amounts of travel, combined with the gruelling AFCON schedule, has the potential to take a heavy toll on players. Consequently, an additional issue to be considered in this project is the risk of injury to players at AFCON and its potential subsequent impact on the players' team. Specifically, it is examined whether participation in AFCON has potential implications on the total days lost of injury by EPL teams.

Table 19. Panel data regression

Dependent variable is total days lost of injury by each EPL team
(season 2004-2005 to season 2016-2017)

<i># of competitions</i>	82.541 (0.141)	82.541 (0.141)	
<i>AFCON</i>		298.285*** (0.006)	
<i>AFCON players</i>			57.447*** (0.056)
<i>all seasons</i>	YES	YES	NO
<i>only AFCON seasons</i>	NO	NO	YES
<i>season dummies</i>	YES	YES	YES
<i>R²</i>	0.173	0.173	0.277
<i>N</i>	260	260	140

Notes: *p*-value within parentheses. * Significant at 10%; ** significant at 5%; ***significant at 1%

Source: Own elaboration (UEFA RGP 2017/18)

It is within this context that an additional empirical analyses is conducted. The total days lost of injury by each EPL team in a particular season is regressed on a set of covariates including controls for the season and the number of competitions played (*# of competitions*) and a dummy variable (*AFCON*) that takes value 1 for those seasons with AFCON edition. Next, this dummy is replaced in the model specification by a variable that accounts for the number of African players from a particular EPL team that are drawn to playing AFCON (*AFCON players*). Estimates are shown in Table 19.

(xviii) It seems that (on average) the total days lost of injury by an EPL team increases in those seasons where the AFCON tournament takes place.

(xix) Within a particular season with AFCON edition, the total days lost of injury seems to be positively impacted by the number of African players drawn to playing AFCON. As higher the number of AFCON players a team has, higher the number of total days lost of injury.

A cross section analysis for the 2016-2017 (Table 20) season supports previous findings.

Table 20. Cross section regression.

Dependent variable is total days lost of injury by each EPL team (2016-2017)

<i>AFCON players</i>	287.924***
	(0.007)
<i>Adjusted R²</i>	0.302
<i>N</i>	20

Notes: *p*-value within parentheses. * Significant at 10%; ** significant at 5%; ***significant at 1%

Source: Own elaboration (UEFA RGP 2017/18)

6. Limitations

A limitation to be acknowledged is that due to data availability, it is not possible to extend the analysis to other European leagues, such as Belgium *Jupiler League* or Turkish *Süper Lig*²⁵. Despite this limitation, this project's results are expected to be robust enough to allow for generalization.

Likewise, future relevance of this study is limited since AFCON is scheduled in 2019 for June and July. Therefore, it will not be possible to replicate and check these results in the future.

While this project examines the effects of the number of players being sent to the AFCON tournament on teams' performance outcomes, it should be noted, as in Cairney et al. 2015, that other factors such as team cohesion or confidence in the teams' ability to compete were not tested in the current study. More research examining the complex relationships between psychosocial and physiological determinants of team-based performance are warranted.

7. The impact of the research and the consequences for UEFA and football

It has become commonplace for elite professional football players to represent their respective countries in major international competitions. However, what is unique about African players is that the premier competition – apart from the FIFA World Cup –, the AFCON, occurs during European domestic seasons themselves.

²⁵ In AFCON'17 there were 32 African players playing in these two leagues, accounting for almost 9% of AFCON participation.

AFCON which removes top African players from European domestic leagues for as long as six weeks during domestic league seasons, causes with each new edition controversies and complaints among UEFAs federations and clubs. It represents a clear conflict of interests and a concerning issue about European football to be addressed.

However, no evidence currently exists neither evaluating the effect of player absence on football play performance nor estimating the impact of National team's tournaments on domestic leagues.

This final report draws together all the empirical analysis and results to make an overarching assessment of the impact of national teams' tournaments on domestic leagues, based on the case study of AFCON (the empirical approach of this project will move previous literature forward); and to make recommendations in terms of both the scheduling of national teams' competitions and league policies about players' absence.

The findings are relevant for the debate about the overlapping of National Teams' tournaments with domestic (clubs) competitions and the release of players to national teams. Specific team and league effects of African player absences during AFCON seems to be different across European leagues and teams.

As football's governing body within Europe, UEFA involves all stakeholders (leagues, clubs, players, supporters) in the decision-making process in European football matters. So UEFA must clearly be concerned by the well-being of clubs and leagues. Accordingly, it seems quite relevant to offer analytical access to the question what can be done in order to balance the conflicting interest that derive from players' participation in AFCON.

In addition, and according to UEFA's "Eleven values"²⁶ - "*National team and club football are vital and complementary elements of football. UEFA will remain committed to ensuring that this balance is maintained*" -, the proposed research project addresses a topic of current importance and relevance to European football in general²⁷.

Finally, since the findings of this study are certainly expected to provide help to make recommendations in terms of the scheduling of national competitions and league policies about players' absence, they are of interest to UEFA member associations, making a clear contribution to the overall governance of European football.

²⁶ <http://www.uefa.org/about-uefa/eleven-values/>

²⁷Also, in terms of FIFA administration, the interests of Africa's football associations should be incorporated in a central way into European football's governance.

7.1. Key findings

In terms of bringing this research report to a close, it is useful to make a few tentative remarks (based on reached results) on the impact of AFCON tournament on European professional football.

1. The results indicate that European leagues are differentially impacted by AFCON.
2. In general, European leagues exhibit a lower competitive balance in those seasons in which AFCON takes place.
3. But within-season competitive balance seems to increase during AFCON.
4. However, significant differences are observed among leagues (opposite effect and even no effect are noted in some cases) that can be explained by differential impacts across teams.
5. Mainly, teams that send more players to AFCON rosters are disadvantaged.
6. Nonetheless, this result loses significance when corrected by players' abilities and it is not consistent across leagues.
7. Participation in AFCON seems to increase risk of injury.

Whether these outcomes are beneficial or harmful to European football is unclear and is beyond the scope of this research, but is a direction for future research. Practically, the results suggest that while the sending of players to AFCON does have a negative impact on teams' performance, the overall impact is small (the overall effect sizes – estimates – are not large) and it cannot be generalized to all the analysed leagues. This lends support the argument in favour of allowing AFCON players to participate in the tournament, given that no strong claims can be made that participation negatively impacts performance at the team level to a point that is detrimental to a team's overall success. Anyway, cautionary attention should be paid to the risk of injury associated with participation in international top-level tournaments, such as AFCON.

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Appendix A: A detailed budget (in Euros)

The following table contains detailed information related to the budget.

Cost Category		Total in Euro
Personnel - <i>Principal Investigator (PI)</i> [including estimated taxes]		9,500
Data - <i>Data analysis and statistical software license</i> [Stata SE15]		1,000
Other (travel)	<i>Research stay at the University of Liverpool, UK</i>	1,150
	<i>Research meeting with Prof. Brad Humphreys – Universtiy of West Virginia, US</i>	2,250
	<i>Research working days at Universitat Pompeu Fabra, ES</i>	700
	<i>Project presentation at the Royal Spanish Football Federation headquarter</i>	400
Total		15,000

Note: Research stays and working meetings took place at relevant/prestigious research institutions in the field of sports economics and the economics of football in order to push the project forward.