

## How to build up a team for long term success? The CIES Football Observatory approach

Drs Raffaele Poli, Loïc Ravenel and Roger Besson

### 1. Introduction

This article sets out the approach developed by the Football Observatory of the International Centre for Sports Studies (CIES) for advising clubs on the creation and management of a team with a view to long term performance.

Our approach identifies four key areas which allow teams to put themselves on the road to success: team chemistry, demographic structure, performance analysis and transfer policy.

Team chemistry refers to the managers' ability to create a performance-orientated relational context within the framework of a clearly established project that team members identify with by fully assuming their specific responsibilities.

The demographic structure defines the capacity of managers to make up a balanced squad from the point of view of age, experience and contract length so as to guarantee sufficient long term stability.

Performance analysis refers to the managers' ability to objectively identify the strengths and weaknesses of their teams in order to find collective and individual solutions to improve results or anticipate eventual problems.

Lastly, transfer policy defines the managers' capacity to renew the pool of players available to optimise, or maintain over the long term, group unity, demographic balance and performance levels.

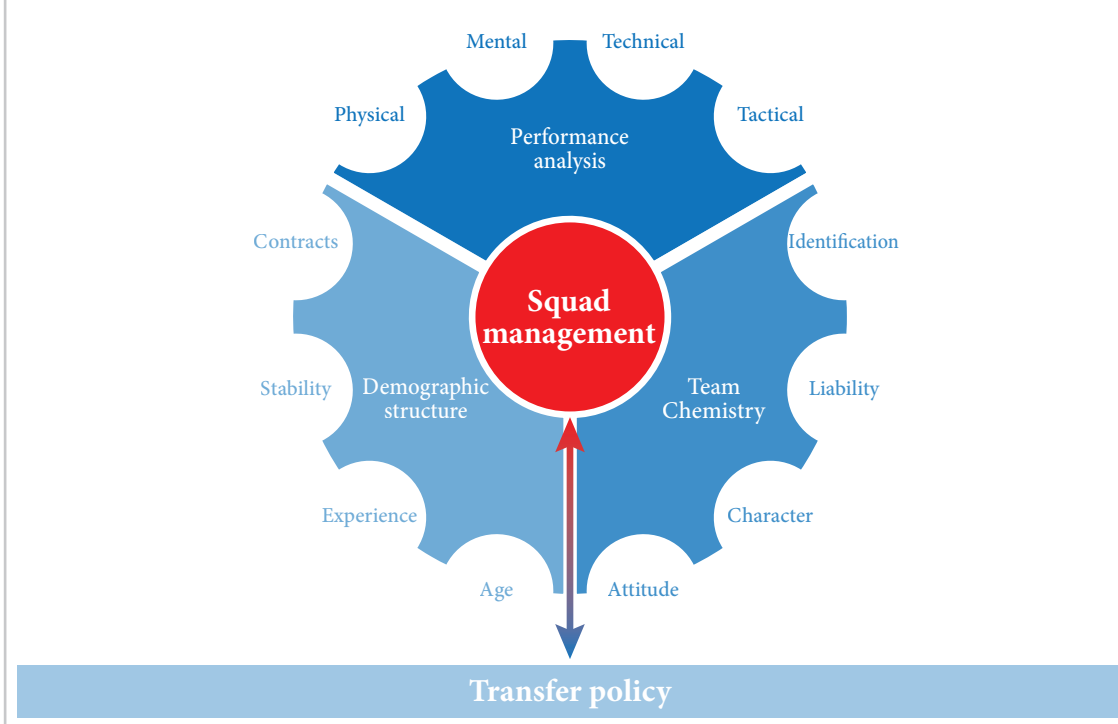
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<sup>1</sup> For more information, see [www.football-observatory.com](http://www.football-observatory.com) and [www.cies.ch](http://www.cies.ch).

Using examples, this article takes an in-depth look at the approach to demographic structure (chapter 2), performance analysis (chapter 3) and transfer policy (chapter 4). Only the fourth key domain, team chemistry, is not illustrated by examples.

Nevertheless, as underlined by actors involved in the game that we are in regular contact with, it is useful to remember that team chemistry is built right from the beginning of the recruitment process through the capacity to select players with appropriate human qualities: empathy, a sense of the collective good, humility, open-mindedness, a desire to learn, etc.

Figure 1: Key dimensions for sustainable squad management according to the CIES Football Observatory



## 2. Demographic structure

Obtaining positive results over the long term depends largely on the manner in which a team is structured from a demographic point of view. Our studies<sup>2</sup> notably show the importance of taking into account four key areas: age, experience, stability and contract duration.

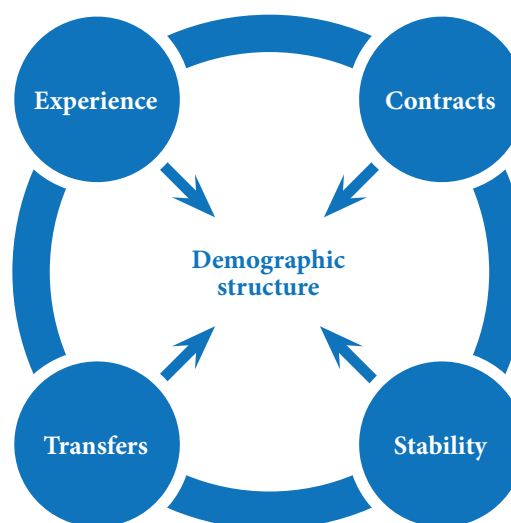
The analyses developed since 2005 indicate that the best performing clubs have balanced squads from the point of view of age and experience. This permits young footballers to develop alongside more experienced players and progressively replace them as pillars of the team.

A balanced structure in age and experience is also a necessary prerequisite to maintain a satisfactory level of stability over the long term. From this point of view, it is necessary to limit the number of transfers by privileging the recruitment of young talents who can potentially become part of the team project over the long term.

Within a framework of stability that favours the integration of new recruits, the signing of long term contracts, with automatic extension options, is generally beneficial not only on a sporting level but also economically.

<sup>2</sup> See notably [CIES Football Observatory Annual Review](#), nine editions (2006-2014); and [CIES Football Observatory Demographic Study](#), six editions (2009-2014), as well as [CIES Football Observatory Monthly Report n°1, Club instability and its consequences](#).

Figure 2: Key areas of squad demographic structure according to the CIES Football Observatory



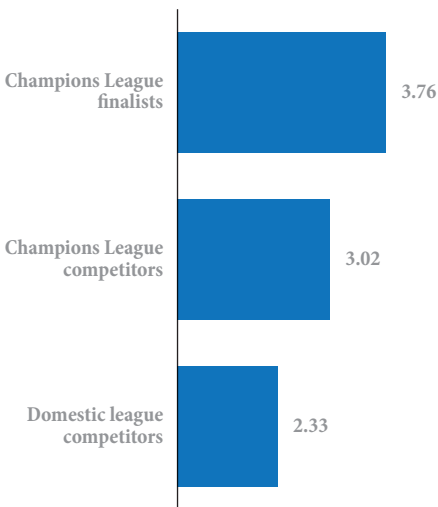
The statistical link between stability and long term success comes to the fore notably in the analysis of the average stay of players in the first team squad of their employer club. Generally speaking, the best teams have more stable squads than lower-ranked ones.

For example, between 2009/10 and 2014/15, the players of Champions League finalists were, on average, present in the squad since 3.8 years when their team reached the final. This value was 3.0 years for the other clubs having taken part in the competition and only 2.3 years for non-participatory teams of the leagues represented.

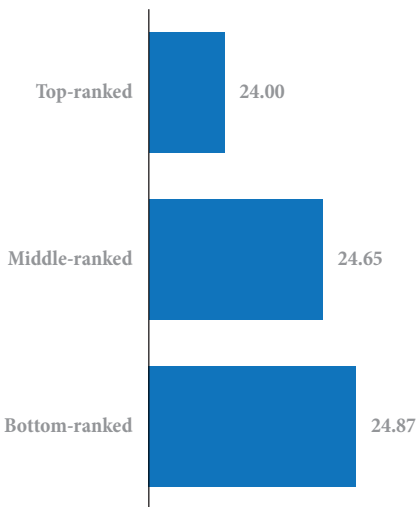
The analysis of the age at the moment of recruitment shows the importance of focusing on the signing of relatively young players. Since the 2009/10 season, for example, the big-5 clubs having finished in the top six places in their respective leagues fielded players aged, on average, 24.0 when they joined the squad. This value is 24.7 for mid-ranking clubs and 24.9 for bottom-ranked ones.

<sup>3</sup> For youth academy players, age at first match in the domestic league.

**Figure 3: Average stay in the first team squad, according to club status (2009/10-2014/15)**



**Figure 4: Age at recruitment according to club ranking (big-5 leagues, 2009/10-2014/15)**



The analysis of the ratio between players' average stay and age at recruitment (ASAR ratio) at big-5 league level for the 2014/15 season shows that 14 of the 20 best values are for teams qualified for UEFA club competitions. Among the clubs in the first 15 places, only Real Sociedad, Everton and Montpellier are not involved in the Champions League or Europa Cup. Nevertheless, our analysis suggests that they are in a favourable position to do so in the near future.

Figure 5: Best ASAR ratio for big-5 league clubs, 2014/15

	Average Stay	Age at Recruitment	ASAR Ratio	Final ranking	
1. Real Sociedad (ESP)	5.38	22.01	0.244	12	
2. Real Madrid (ESP)	5.23	22.10	0.236	2	CL
3. Barcelona (ESP)	5.37	23.21	0.231	1	CL
4. Borussia Dortmund (GER)	4.96	22.43	0.221	7	EL
5. Athletic Bilbao (ESP)	4.77	22.93	0.208	7	EL
6. Everton (ENG)	4.43	24.37	0.182	11	
7. Juventus (ITA)	4.53	25.16	0.180	1	CL
8. Chelsea (ENG)	4.16	23.74	0.175	1	CL
9. Liverpool (ENG)	3.88	22.22	0.174	6	EL
10. Montpellier (FRA)	4.12	24.13	0.171	7	
11. Bayer Leverkusen (GER)	3.70	22.07	0.168	4	CL
12. Manchester United (ENG)	3.86	23.02	0.168	4	CL
13. Bayern München (GER)	3.92	23.64	0.166	1	CL
14. Schalke 04 (GER)	3.46	22.62	0.153	6	EL
15. Lyon (FRA)	3.31	22.19	0.149	2	CL
16. Newcastle (ENG)	3.45	23.38	0.147	15	
17. Manchester City (ENG)	3.77	25.77	0.146	2	CL
18. Marseille (FRA)	3.38	23.18	0.146	4	EL
19. Lille (FRA)	3.47	23.83	0.146	8	
20. Stoke City (ENG)	3.56	24.72	0.144	9	

CL: Qualified for Champions League - EL: Qualified for Europa League

### 3. Performance analysis

Any club with ambition must be capable of objectively evaluating both individual and collective performances (beyond results obtained over the short-term) from a multidimensional perspective (mental, physical, tactical and technical).

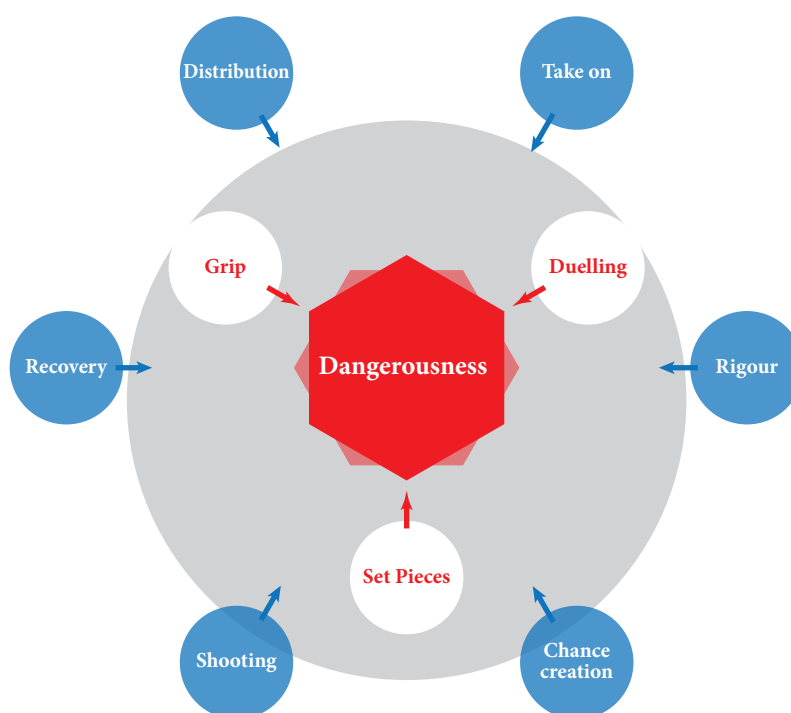
On a technical level, the basic principle of the CIES Football Observatory approach consists of considering that in football, like all team sports, the whole is greater than the sum of the parts. All great teams throughout history have understood the importance of putting individual talent at the service of the collective effort<sup>4</sup>.

From a methodological point of view, our approach to the technical analysis of performance consists of considering the team as a single unit before going on to study player performance on an individual level.

Indeed, players' performance must always be analysed taking into consideration the framework of which it is a part. Insufficient consideration of the collective conditions of the production of individual performance explains many failures when it comes to transfers.

<sup>4</sup>. This principle is also important regarding transfer policy insofar as it implies the necessity of giving major importance to the human qualities of players during the recruitment process.

Figure 6: CIES Football Observatory approach for the technical analysis of performance



Individual performance depends on the capacity of clubs to bring together players with complementary characters and characteristics, as well as on the matching of footballers' profile with the mental, physical, technical and tactical skills requested to play in a given position with respect to the style of play performed.

Moreover, individual performance is influenced by team configuration in general. As highlighted above, team chemistry plays a central role in the production of performance. Aside from the sporting characteristics of players, their moral values are of the highest importance in optimising the collective effort.

The demographic structure of squad also has a decisive influence on the level of performance of a football team. For example, it is much easier for a footballer to be competitive in a stable, harmonious and strategically-driven environment, than in an unstable and conflictual context with no strategic vision in place.

The strong interdependence between all of these contextual elements renders performance analysis in football particularly complex. An in-depth knowledge of the world of professional football, a fine understanding of the logics of the game and a perfect mastery of technical statistics are essential prerequisites to be effective in this domain.

From a technical point of view, the CIES Football Observatory's approach for the objective analysis of game performance is based on four key indicators on a collective level and six at an individual one.

Collectively, our indicators measure the ability of teams to dominate their opponents when it comes to shots, passing, duelling and free kicks. In any case, it is the ratio between the team's productivity with respect to opponents. A value superior to 1 reflects domination.

More specifically, dangerousness is the ratio between the volume and quality of shots attempted and conceded, grip on the game focuses on the number and position of passes, duelling refers to the volume and outcome of dribbles and tackles, while set play measures the efficiency at free kick and corner levels.

Thus, for example, the indicator for dangerousness in the big-5 leagues for the 2014/15 season shows that the qualification of Barcelona and Juventus for the Champions League final reflect the values attained throughout the season. The Catalans were not only very efficient in attack, but were also very solid in defence.

On the contrary, among the ten big-5 league clubs with the best dangerousness values, only Olympique Lyonnais conceded more or better opportunities to adversaries than Real Madrid. The reorganisation of the defence is without a doubt the primary task of the new Merengues coach Rafael Benitez.

**Figure 7: Best values in dangerousness, big-5 leagues (2014/15)**

Team	Own	Opp.	Ratio
1. Barcelona	114.7	25.9	4.42
2. Juventus	63.2	19.4	3.25
3. PSG	98.7	32.2	3.07
4. Atlético Madrid	79.0	26.2	3.01
5. Bayern München	91.9	30.9	2.97
6. Real Madrid	108.0	38.0	2.84
7. Chelsea	75.0	30.5	2.46
8. Napoli	81.6	36.4	2.24
9. Arsenal	74.5	37.3	2.00
10. Lyon	87.3	45.5	1.92

At individual level, our key performance indicators refer to players' ability in six complementary areas of the game. These metrics are taken into account specifically with regard to the position played by the footballer (fig.8).

From a defensive standpoint, recovery and rigour refer to the ability to minimise goal opportunities for opponents through proficient interception work, and respectively, strength in duels. Distribution is the ability to keep a hold on the game through efficient passing.

From an attacking perspective, shooting measures the ability of players to take advantage of goal opportunities. Chance creation is the ability to put teammates in a favourable position to strike, while take on refers to the ability to create dangerous situations by successfully challenging opponents.

Our approach allows us to identify not only the best performing players in absolute terms, but also those who outperform their teammates. This approach is notably useful for revealing the potential of players that are not yet part of the most competitive clubs, as well as to measure the level of reliance of teams on their best players.

Thus, for example, according to our approach, Thiago Silva was the best performing big-5 league centre back during the 2014/15 season. Raphaël Varane tops the relative ranking in Spain. This result shows the great potential of the young Frenchman and confirms the necessity for Real Madrid to improve its defensive organisation through a better sharing of the work among players fielded.

While at the top of the rankings in absolute terms are players who are already part of the best European clubs, this is not always the case for the relative tables. Our analysis suggests, for example, that relatively unknown footballers such as Jores Okore (Aston Villa) and Loïc Perrin (St. Etienne) have the ability to play for even better clubs.

**Figure 8: Key performance indicators per position**

	Rigour	Recovery	Distribution	Take on	Chance creation	Shooting
CB	****	****	****			
FB	**	**	**	**	**	**
DM	***	***	***	*	*	*
AM	*	*	*	***	***	***
FW				****	****	****

**Figure 9: Best centre backs per league**

	Absolute	Relative
ENG	Dejan Lovren	Jores Okore
FRA	Thiago Silva	Loïc Perrin
GER	Jérôme Boateng	Emir Spahić
ITA	Giorgio Chiellini	Rafael Marquéz
ESP	Javier Mascherano	Raphaël Varane



## 4. Transfer policy

The economic stakes linked to transfers are becoming more important in professional football. The financial model for numerous clubs is based on the ability to raise capital gains on the transfer market. With increasing costs, every error in this domain can have serious consequences, even for the wealthiest clubs.

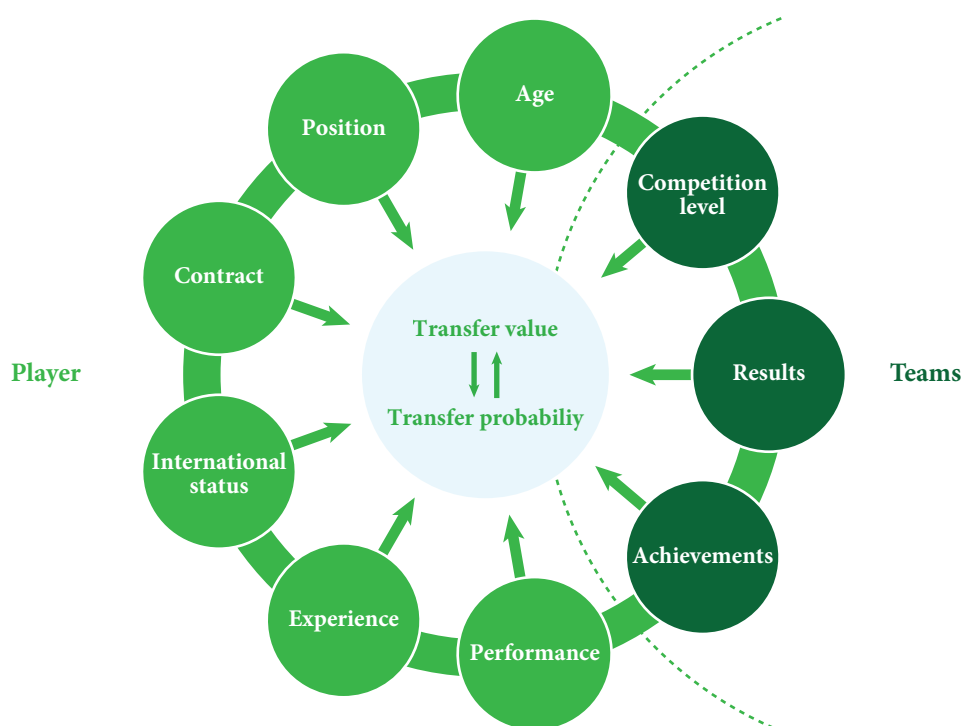
The optimisation of recruitment strategies is achieved not only through an analysis of the human and sporting potential of a player, his complementarity with his teammates or his compatibility with the style of play practised or envisaged, but also by an in-depth study of a reasonable price to pay to recruit him. The same applies when transferring a player to another team.

From a sporting and financial planning perspective, the ability to anticipate the probable progression of transfer value lends a competitive edge to teams, especially when it comes to choosing the most appropriate moment to let a player go. The same applies to the ability to ascertain the likelihood of players to be transferred for a particular sum of money.

In order to determine the value and probability of a transfer, the CIES Football Observatory academic team analysed in detail the trajectories of footballers having played in big-5 league teams since 2009. Among them, we notably find the career paths of almost 2,000 players having been the object of paid transfers<sup>5</sup>.

<sup>5</sup> We have also developed models based on a greater number of transfers that can be applied for players outside of the five major European leagues.

Figure 10: Key factors to estimate transfer values and probabilities



Through this approach, we were able to isolate the key factors allowing us to summarise with accuracy the logics of the market and to predict future transfer fees, as well as the likelihood of a paid transfer occurring. These factors concern both players and their teams as illustrated in Figure 10.

During the last two transfer windows, the correlation measured between estimated transfer values and those actually paid for big-5 league players was 80%. The strength of the correlation shows, on one hand, that the footballers' transfer market is to a large extent rational and, on the other, that this rationality is well understood by the model developed by our research team.

Consequently, we can ascertain that our approach allows interested parties to identify exploitable market bias by transferring, for example, players that are over-valued or by recruiting undervalued footballers.

Figure 11: Correlation between transfer fees estimated and paid for big-5 league footballers (2015)

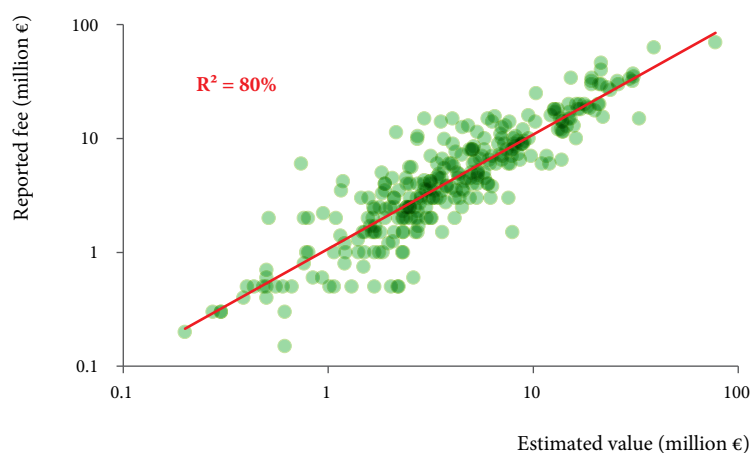


Figure 12 and 13 below illustrate our approach through presenting the 20 big-5 league players that on the 8th June 2015 had the highest transfer value, as well as the 20 footballers whose paid transfer likelihood was highest.

An [online form](#) available on the CIES Football Observatory website allows access to approximate transfer value estimates of big-5 league players through a selection of variables available to the public. More in-depth analyses are possible through research mandates. This is particularly useful in the context of transfer negotiations or litigation, during club take-overs or to conclude insurance contracts.

**Figure 12: Highest transfer values, big-5 leagues (June 2015)**

	Contrat	Age	Valeur
1. L. Messi (Barcelona)	2018	27	255-281
2. E. Hazard (Chelsea)	2020	24	135-149
3. C. Ronaldo (Real Madrid)	2018	30	113-125
4. Neymar (Barcelona)	2018	23	90-99
5. S Agüero (Man. City)	2019	27	78-86
6. R Sterling (Liverpool)	2017	20	74-81
7. P Pogba (Juventus)	2019	22	70-77
8. D. Costa (Chelsea)	2019	26	70-77
9. A. Sánchez (Arsenal)	2018	26	68-75
10. J. Rodríguez (Real Madrid)	2020	23	63-69
11. L. Suárez (Barcelona)	2019	28	60-66
12. A. Griezmann (Atlético)	2020	24	59-65
13. F. Fàbregas (Chelsea)	2019	28	59-65
14. Isco (Real Madrid)	2018	23	57-63
15. H. Kane (Tottenham)	2020	21	54-59
16. G. Bale (Real Madrid)	2019	25	51-56
17. P. Coutinho (Liverpool)	2020	22	50-55
18. T. Courtois (Chelsea)	2019	23	50-55
19. Oscar (Chelsea)	2019	23	48-52
20. K. Benzema (Real Madrid)	2019	27	45-49

**Figure 13: Highest fee paying transfer probabilities, big-5 leagues (June 2015)**

	Contrat	Age	09/2015*
1. C. Austin (QPR)	2016	25	[=]
2. A. Ekdal (Cagliari)	2016	25	[T]
3. P. Dybala (Palermo)	2016	21	[T]
4. R. Sterling (Liverpool)	2017	20	[T]
5. J. Mauri (Parma)	2016	19	[T]
6. A. Lacazette (Lyon)	2018	24	[E]
7. R. Guerreiro (Lorient)	2017	21	[=]
8. A. Paloschi (Chievo)	2016	25	[E]
9. I. Gündoğan (Dortmund)	2016	24	[E]
10. D. Wass (Evian TG)	2016	26	[T]
11. E. Kachunga (Paderborn)	2016	23	[T]
12. T. Hemed (Almería)	2016	28	[T]
13. F. Orellana (Celta Vigo)	2016	29	[E]
14. R. Métanire (Metz)	2016	25	[=]
15. B. Sarr (Metz)	2016	23	[T]
16. N. Fekir (Lyon)	2019	21	[E]
17. J. Ayew (Lorient)	2018	23	[T]
18. G. Defrel (Cesena)	2018	23	[T]
19. O. Sorg (Freiburg)	2016	25	[T]
20. S. Okazaki (Mainz)	2016	29	[T]

\* Situation on 27/08/2015:

[=] no change, [T] summer transfer, [E] contract extension

## 5. Conclusion

In their quest for higher performance, professional football clubs are constantly progressing. This holds particularly true from the perspective of technical staff available: medical staff, fitness coaches, rehabilitation specialists, nutritionists, psychologists, video or data analysts, statisticians, etc.

From a management perspective, however, the experience of the CIES Football Observatory shows that much remains to be done to create the most favourable environment to support the expression and development of player talent and sustainably reach the best possible results, both from a sporting and economic standpoint.

Our research allows forward-thinking leaders to take a step back from their practices and fully develop their strategic role. The consideration of the multiple aspects behind the creation and management of a successful squad over the long term as detailed in the paper provide clubs with a competitive advantage regardless of their ambitions or level of competition.

As an independent research group, we are at the service of all teams sharing our quest for innovation to support them on their way to achieving long term success.