CIES FOOTBALL OBSERVATORY

ANNUAL REVIEW

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About the CIES Football Observatory

The Football Observatory is a research group within the International Centre for Sports Studies (CIES), a private foundation affiliated to the University of Neuchâtel, in Switzerland. Set up in 2005 by Drs Raffaele Poli and Loïc Ravenel, it currently comprises a staff of four full-time permanent researchers specialised in data mining and the statistical analysis of sport.

Two reports are published every year. In January, the Demographic Study presents an in-depth analysis of club composition and player characteristics in 31 top division leagues of UEFA member countries. In June, the Annual Review analyses clubs and players in the big-5 European leagues from a demographic, economic and pitch performance perspective.

Since 2005, the CIES Football Observatory has been mandated to undertake original research by several prestigious institutions such as, but not limited to, FIFA, UEFA, European Club Association (ECA), European Professional Football Leagues (EPFL), Swiss Football League (SFL), as well as top-flight European clubs in several countries.

OptaPro

Powered by the most comprehensive and detailed databases in sport, OptaPro has developed a suite of analytical products and services that help professional clubs fine-tune their performances, proficiently scout their opponents and effectively recruit new talent. By utilising expertise built up over two decades of sports data collection, OptaPro's extensive and consistent dataset combined with advanced analytical products helps club professionals to work more efficiently and make smarter decisions more quickly. OptaPro provided all the data processed by the CIES Football Observatory academic team in this publication to analyse the pitch performance of clubs and players.

Foreword

The ninth edition of the CIES Football Observatory Annual Review anticipates the kick-off of the 2014 World Cup. While not directly focused on national teams, the findings presented in this publication can also be interpreted in the light of this competition.

For example, our analysis of the pitch performance of players during the 2013/14 big-5 league season suggests that it will be very difficult to score against Brazil. Indeed, Thiago Silva, Dante, Dani Alves, Maxwell, Marcelo and Maicon are among the best performing players in their respective position. Felipe Scolari could even afford not to select other very productive and efficient defenders such as Rafinha and Luis Filipe.

However, our analysis also shows that Brazilian players are less represented among the best performing midfielders and forwards. Spain appears thus to have a more complete squad with at least one player in the top 10 of the rankings for each position. Of course, the outstanding talent of the four best performing forwards, Cristiano Ronaldo (Portugal), Luis Suárez (Uruguay), Ciro Immobile (Italy) and Lionel Messi (Argentina), could prove to be a lethal weapon for opponents.

With only one player in the top 10 places of the rankings per position, Daniel Sturridge among forwards, England will probably not be in a position to win the competition. The situation is even worse for France: the only player among the 10 best performing per position, Samir Nasri among offensive midfielders, was not selected! Luckily, it is still difficult to predict game outcomes and chance will play a great role in such a short competition with knock-out matches.

Chance certainly played a lesser role in the recent league titles won by Paris St-Germain, Manchester City, Atlético Madrid, Bayern Munich and Juventus. All these clubs were able to build very competitive squads with a lot of complementarity between teammates. In four cases out of five, they were also the club that fielded the most expensive line-ups in their league with an average transfer expenditure per player of € 20.3 million for Paris St-Germain, 20.1 for Manchester City, 11.6 for Bayern Munich and 11.2 for Juventus.

However, the highest value overall was recorded for Champions League winner Real Madrid: € 30.7 million. Spanish title winners Atlético Madrid were outstanding with an average transfer fee of "only" about € 4.3 million per player on the pitch. From an economic perspective, it is also worth highlighting results obtained by some of the clubs that were among those that spent the least to sign players fielded such as Crystal Palace in England, Elche in Spain, Guingamp in France, Augsburg in Germany and Verona in Italy. This publication will allow you to understand what factors permitted these clubs to over-perform.

The Annual Review 2014 also discloses the market value of big-5 league players on the basis of our unique econometrical model. It notably shows that the record fee paid last summer by Real Madrid to sign Gareth Bale could be broken if Lionel Messi (€ 216 million), Cristiano Ronaldo (€ 114 million) or Luis Suárez (€ 107 million) would be transferred. For the up-coming transfer window, we will also launch an online player market value calculator that will allow you to access a reliable estimation of the economic value of big-5 league players.

The attention that you give to all our products and innovations is our best reward!

Raffaele Poli, Head of CIES Football Observatory

Highlights

(1) Market value

Lionel Messi is currently the big-5 league footballer with the highest market value. According to our exclusive econometrical model, the estimated value of Barcelona's player is almost twice as high as for **Cristiano Ronaldo**: € 216 million versus € 114 million. This is mainly related to the younger age of the Argentinian prodigy. However, contrary to Ronaldo's market value, Messi's decreased (- € 19 million) during last year. A third player could break the record for the highest transfer fee ever spent: **Luis Suárez** (€ 107 million). At club level, the highest transfer asset values were measured for the two Spanish giants: **Barcelona** (€ 593 million) and Champions League winners **Real Madrid** (€ 488 million).

The comparison between transfer fees paid by clubs to sign new players at the start or during the 2013/14 season and their current market value allows us to assess the best and worst recruitments from a financial perspective. The highest negative gap was recorded for **Gareth Bale** (€ -37 million). This finding reflects the fact that Real Madrid clearly paid over the odds to convince Tottenham to release the player. Conversely, the highest positive gap was observed for **Max Kruse**. Borussia Mönchengladbach signed him for a bargain from Freiburg thanks to the existence of a very low buy-out clause. His current market value is eight times greater than the fee paid one year ago. **Adnan Januzaj** tops the table for the highest market value for players launched from youth academies in 2013/14.

(2) Player performance

The analysis of players' production and efficiency allowed us to objectively identify the best performing footballers at big-5 league level. **Gianluigi Buffon** (Juventus) was the goalkeeper who achieved the highest percentage of saves. His teammate **Giorgio Chiellini** tops the ranking for centre backs. The Italian defender has only one year of contract remaining and should thus be coveted by all top-flight European clubs that aim to reinforce their defence. The best performing full-back was **Dani Alves** (Barcelona). The Brazilian also has only one year of contract remaining. His possible transfer would considerably weaken Barcelona's side.

Miralem Pjanić (Roma) was the best performing player among central and defensive midfielders. His recent contract extension should allow Roma to further improve its performance levels next season. **Angel Di María** (Real Madrid) tops the table for offensive midfielders. Carlo Ancelotti's decision to put the Argentinean at the heart of Real Madrid's game was a key factor for the Champions League winning campaign. Another Real Madrid's player, **Cristiano Ronaldo**, heads the ranking for forwards. Contrary to Lionel Messi, the performance standards of the Portuguese superstar were outstanding throughout the season.

The ninth edition of the CIES Football Observatory Annual Review is composed of four sections: player market value, player performance, club performance and club demographics.

(3) Club performance

The analysis of club performance covers the areas of defending, passing and attack. At defensive level, Barcelona tops the European table for the least shots conceded per match (8.9), while **Juventus** (4.2) heads the ranking for the least shots conceded from inside the box. Antonio Conte's team is also at the top of the table for the highest number of shots on target needed by opponents to score (5.2). **Atlético Madrid**'s opponents had to make 29 passes in the opposite half before to be able to shoot, the highest figure at big-5 league level. Conversely, the most permeable defence in the five major European championships was that of Nuremberg: only 15 opponents' passes in **Nuremberg**'s half per shot conceded.

Bayern Munich was the club that made the most passes during last season (on average 739 per game). This clearly reflects the impact of Josep Guardiola's recruitment. **Bayern Munich** also tops the table for the number of passes in the opposite zone (437 per match). Interestingly, this is almost the same level than at **Barcelona** (433). No big-5 league club made as many passes in its own half than **Paris St-Germain** (319). The French champions also head the European ranking for the highest number of passes before contesting opponents (43.9). This figure is much higher than for all other top-flight clubs. PSG should consider finding a better balance between ball possession and challenges.

Real Madrid heads the table for the highest number of shots attempted per match (19.6). The Castilian team is also at the top of the big-5 league ranking for shots on target: on average 7.9 per game. The offensive production of Carlo Ancelotti's team in the Champions League winning campaign was only slightly lower than in the domestic league: 7.3 shots on target per match. This is the highest figure among the last six finalists. In terms of efficiency, **Barcelona** and **Manchester City** top the big-5 league table for the least shots needed to score: on average only 6.4 per game. The record high in conversion rate for big-5 league champions since 2008/09 was recorded at Barcelona: 4.6 shots per goal in 2012/13.

(4) Club demographics

No club in football history invested as much money to sign players fielded as **Real Madrid** during last season. The average transfer expenditure of the Castilian team per footballer on the pitch was € 30.7 million in the Spanish Liga and € 32.3 million at Champions League level. Three 2013/14 big-5 league champions out of five also broke the record of the highest average transfer fee paid per player fielded: € 20.4 million for Paris St-Germain, € 20.1 million for Manchester City and € 11.6 million for Bayern Munich. Conversely, **Atlético Madrid** was the Spanish title winner that spent on average the least to make up its line-ups: € 4.3 million. With a similar level of transfer expenditure, Milan, for example, did not even qualify for European club competitions next season.

Great discrepancies also exist with regard to the percentage of minutes played by footballers signed at the start or during the season: from 82% at **Genoa** to 5% at **Barcelona**. Among big-5 league champions, this figure varies from 24% (Manchester City) to 10% (Bayern Munich). In all leagues except Spain, runner-up clubs fielded new players for a higher percentage of minutes than champions. Since 2006/07, the average number of seasons in the first team squad for players fielded by Champions League winners was at least three, up to 4.3 for Real Madrid during the last winning campaign. All these figures reveal that the optimal mix between team stability and new signings is a key factor to be considered for sustainable success. From a sporting perspective, all big-5 league clubs should prioritise quality over quantity in their transfer operations.

Methodology

During the last twelve months, the CIES Football Observatory academic team has continuously fine-tuned its methodologies to understand the logics of success by means of the combined analysis of the composition of squads and the pitch performance at both individual player and team level. More details on the methodology conceived to analyse pitch production and efficiency are presented on page 22. Moreover, we have further developed our exclusive statistical model to assess the market value of players and predict transfer fees.
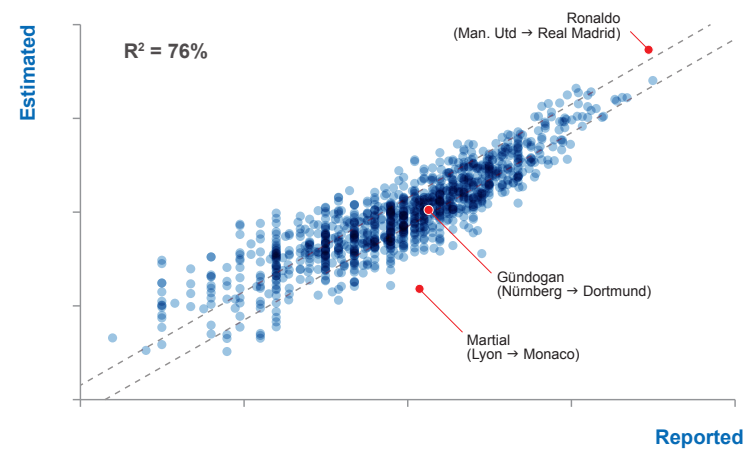
Years of work has allowed us to develop a powerful econometrical model based on the in-depth analysis of a sample of about 1,500 players transferred for money from big-5 league teams since the summer transfer window preceding the 2009/10 season. The values for individual footballers presented in the next section are estimates on the basis of past transfers of players with similar characteristics (+/- 7.5% around data provided by the model). Estimations do not take into account transfers already completed, buyout clauses in player's contract and options held by clubs for automatic contract extension. Players' contract situation and international experience refer to 1st June 2014.

The statistical model developed includes a multitude of variables relating to the following areas: age, length of contract remaining, position, player performance at club level for last and previous seasons (matches, minutes, goals, assists, passes, tackles, interceptions, etc.), results of the clubs to which players belong, as well as players' international experience and results of association represented at national A-team level.

For more transparency and to show the robustness of the model, during the summer we will regularly compare on the CIES Football Observatory website the estimated value of players according to our model with transfer fees paid for them as reported in the media. This will notably allow us to identify over or under-paid footballers.

Only part of the information on individual players' economic value is disclosed in this publication. However, we remain at the disposal of interested parties to assist them in various areas such as transfer negotiations and contract policies both from risk and asset management perspectives.

Correlation between transfer fees estimated and reported (2009/10-2013/14)

$R^2 = 76\%$

Ronaldo
(Man. Utd → Real Madrid)

Gündogan
(Nürnberg → Dortmund)

Martial
(Lyon → Monaco)

Estimated

Reported

PLAYER MARKET VALUE

HIGHEST ESTIMATED VALUES

Top 60

Situation on 1st June 2014

	Million €
1. Lionel Messi (Barcelona)	200.2 - 232.6
2. Cristiano Ronaldo (Real Madrid)	105.7 - 122.9
3. Luis Suárez (Liverpool)	98.5 - 114.5
4. Eden Hazard (Chelsea)	75.9 - 88.3
5. Neymar Júnior (Barcelona)	62.8 - 73.0
6. Paul Pogba (Juventus)	60.6 - 70.4
7. Gareth Bale (Real Madrid)	58.4 - 67.8
8. Mesut Özil (Arsenal)	49.2 - 57.2
9. Edinson Cavani (Paris SG)	48.0 - 55.8
10. Mario Götze (Bayern München)	47.0 - 54.6
11. Diego Costa (Atlético Madrid)	46.9 - 54.5
12. Oscar dos Santos (Chelsea)	46.0 - 53.4
13. Sergio Agüero (Manchester City)	45.2 - 52.6
14. Isco Alarcón (Real Madrid)	40.9 - 47.5
15. Raheem Sterling (Liverpool)	38.7 - 44.9
16. Ross Barkley (Everton)	36.8 - 42.8
17. Thomas Müller (Bayern München)	36.7 - 42.7
. Wayne Rooney (Manchester United)	36.7 - 42.7
19. Daniel Sturridge (Liverpool)	36.4 - 42.4
. Andrés Iniesta (Barcelona)	36.4 - 42.4
21. Mario Balotelli (Milan)	35.5 - 41.3
22. Romelu Lukaku (Everton)*	35.2 - 41.0
23. Juan Mata (Manchester United)	34.6 - 40.2
24. Sergio Busquets (Barcelona)	34.4 - 40.0
25. James Rodríguez (Monaco)	34.2 - 39.8
26. Jack Wilshere (Arsenal)	33.9 - 39.5
27. Santi Cazorla (Arsenal)	33.6 - 39.0
28. Francesc Fàbregas (Barcelona)	33.2 - 38.6
29. Marco Reus (Dortmund)	32.9 - 38.3
30. Miralem Pjanić (Roma)	32.4 - 37.6

* On loan from Chelsea

	Million €
. Aaron Ramsey (Arsenal)	32.4 - 37.6
32. Koke Resurrección (Atlético Madrid)	31.7 - 36.9
. David Silva (Manchester City)	31.7 - 36.9
34. Juan Cuadrado (Fiorentina)	31.5 - 36.7
35. Philippe Coutinho (Liverpool)	31.2 - 36.2
36. Gonzalo Higuaín (Napoli)	31.0 - 36.0
37. Lucas Moura (Paris SG)	30.6 - 35.6
38. Gerard Piqué (Barcelona)	29.9 - 34.7
39. Arturo Vidal (Juventus)	29.4 - 34.2
40. Julian Draxler (Schalke)	29.1 - 33.9
41. Vincent Kompany (Manchester City)	29.0 - 33.8
42. Ángel Di María (Real Madrid)	28.8 - 33.4
43. Thiago Silva (Paris SG)	28.7 - 33.3
. André Schürrle (Chelsea)	28.7 - 33.3
. Yaya Touré (Manchester City)	28.7 - 33.3
46. Luke Shaw (Southampton)	28.5 - 33.1
47. Sergio Ramos (Real Madrid)	28.3 - 32.9
48. Olivier Giroud (Arsenal)	28.1 - 32.7
49. David Luiz (Chelsea)	27.8 - 32.3
. Marco Verratti (Paris SG)	27.8 - 32.3
51. David Alaba (Bayern München)	26.7 - 31.1
52. Alexis Sánchez (Barcelona)	26.4 - 30.6
53. Radamel Falcao (Monaco)	26.1 - 30.3
54. Luka Modrić (Real Madrid)	25.6 - 29.8
55. Manuel Neuer (Bayern München)	25.4 - 29.6
56. Pedro Rodríguez (Barcelona)	24.7 - 28.7
57. Ramires Santos (Chelsea)	24.1 - 28.1
58. Leonardo Bonucci (Juventus)	24.0 - 27.8
59. Christian Eriksen (Tottenham)	23.9 - 27.7
60. Jérôme Boateng (Bayern München)	23.7 - 27.5

Lionel Messi and Cristiano Ronaldo top the table of the players with the highest market value. The estimated value for Messi is almost twice as high as for Ronaldo: € 216 million versus € 114 million. This is mainly related to the younger age of the Argentinian prodigy, who was born 28 months after the Portuguese superstar. However, with respect to last year, Messi's market value went down (- € 19 million), while that of Ronaldo increased (+ € 4 million). A third player could break the record for the highest transfer fee ever spent: Luis Suárez (€ 107 million). The market value of eight other players is above € 50 million. All of them are offensive midfielders or forwards, with the exception of the Juventus player Paul Pogba. The youngest footballer in the top 60 positions is Luke Shaw (1995), while the oldest is Thiago Silva (1984). Players employed by English and Spanish clubs are over-represented in the ranking, as well as footballers under contract with Barcelona (8 players).

Most expensive line-ups

Among the 11 players signed for the highest transfer fees by their 2013/14 big-5 league clubs are eight offensive players and only three defensive ones: Gianluigi Buffon (signed by Juventus from Parma in 2001), Rio Ferdinand (from Leeds to Manchester United in 2002), and Thiago Silva (from Milan to PSG in 2012). The overall transfer expenditure for the most expensive line-up of last season's big-5 league players totals almost € 700 million. This sum is "only" € 600 million for a 4-4-2 formation. The figures for the 11 big-5 league players with the highest transfer market value are even greater: € 922 million overall and € 721 million for a 4-4-2 formation.

Fees paid

Overall

1. Gareth Bale (Real Madrid CF)	100
2. Cristiano Ronaldo (Real Madrid CF)	94
3. Edinson Cavani (Paris St-Germain FC)	65
4. Radamel Falcao (AS Monaco)	60
5. Fernando Torres (Chelsea FC)	59
6. Neymar Júnior (FC Barcelona)	58
7. Gianluigi Buffon (Juventus FC)	54
8. Mesut Özil (Arsenal FC)	50
9. Thiago Silva (Paris St-Germain FC)	49
10. Rio Ferdinand (Manchester United FC)	46
11. Lucas Moura (Paris St-Germain FC)	45

Total value: 679 million €

4-4-2 line-up

1. Gianluigi Buffon (Juventus FC)	54
2. Fábio Coentrão (Real Madrid CF)	30
3. Thiago Silva (Paris St-Germain FC)	49
4. Rio Ferdinand (Manchester United FC)	46
5. Dani Alves (FC Barcelona)	34
6. Luka Modrić (Real Madrid CF)	42
7. Javi Martínez (FC Bayern München)	40
8. Mesut Özil (Arsenal FC)	50
9. Gareth Bale (Real Madrid CF)	100
10. Cristiano Ronaldo (Real Madrid CF)	94
11. Edinson Cavani (Paris St-Germain FC)	65

Total value: 604 million €

Market value

Overall

1. Lionel Messi (FC Barcelona)	216
2. Cristiano Ronaldo (Real Madrid CF)	114
3. Luis Suárez (Liverpool FC)	107
4. Eden Hazard (Chelsea FC)	82
5. Neymar Júnior (FC Barcelona)	68
6. Paul Pogba (Juventus FC)	66
7. Gareth Bale (Real Madrid CF)	63
8. Mesut Özil (Arsenal FC)	53
9. Edinson Cavani (Paris St-Germain FC)	52
10. Mario Götze (FC Bayern München)	51
11. Diego Costa (Club Atlético de Madrid)	51

Total value: 922 million €

4-4-2 line-up

1. Manuel Neuer (FC Bayern München)	28
2. Luke Shaw (Southampton FC)	31
3. Gerard Piqué (FC Barcelona)	32
4. Vincent Kompany (Manchester City FC)	31
5. Kyle Walker (Tottenham Hotspur FC)	20
6. Sergio Busquets (FC Barcelona)	37
7. Paul Pogba (Juventus FC)	66
8. Eden Hazard (Chelsea FC)	82
9. Gareth Bale (Real Madrid CF)	63
10. Cristiano Ronaldo (Real Madrid CF)	114
11. Lionel Messi (FC Barcelona)	216

Total value: 721 million €

TRANSFER ASSET VALUE

Per club*

Situation on 1st June 2014

Barcelona tops the big-5 league table for the highest transfer asset value: € 593 million. The market value of squad members is also very high for Champions League winners Real Madrid: € 488 million. The figure for five other clubs is superior to € 350 million: Bayern Munich (400), Manchester City (386), Chelsea (385), Liverpool (373) and Arsenal (358). Poor results and squad ageing mainly explain the relatively low levels observed for prestigious clubs such as Manchester United (273) and Milan (138). The lowest figures by league were recorded at Ajaccio (€ 8 million), Eintracht Braunschweig (11), Rayo Vallecano (12), Chievo (15) and Fulham (37). This is mainly due to the combination of bad results and short-term contract policies.

Premier League

Club	Value
Manchester City	386
Chelsea	385
Liverpool	373
Arsenal	358
Manchester United	273
Tottenham	257
Everton	164
Southampton	162
Newcastle	108
Swansea City	102
Aston Villa	84
Stoke City	75
Norwich City	62
Cardiff City	59
Hull City	50
Sunderland	48
West Ham	47
Crystal Palace	42
WBA	40
Fulham	38

Liga

Club	Value
Barcelona	593
Real Madrid	488
Atlético Madrid	221
Athletic Bilbao	121
Real Sociedad	114
Sevilla	91
Valencia	73
Villarreal	72
Celta Vigo	45
Málaga	38
Granada	33
Espanyol	30
Levante	27
Real Betis	27
Getafe	23
Osasuna	20
Real Valladolid	19
Almería	15
Elche	13
Rayo Vallecano	12

Ligue 1

Club	Value
Paris SG	278
Monaco	153
Marseille	85
Lyon	69
Lille	67
Toulouse	58
St-Etienne	46
Rennes	42
Bordeaux	36
Lorient	35
Montpellier	35
Nice	33
Reims	29
Nantes	23
Sochaux	19
Guingamp	16
Evian TG	14
Bastia	14
Valenciennes	13
Ajaccio	8

Bundesliga

Club	Value
Bayern München	400
Dortmund	187
Schalke	142
Leverkusen	115
Wolfsburg	104
M'gladbach	81
Hoffenheim	75
Stuttgart	52
Freiburg	45
Mainz	42
Hamburg	40
Hannover	36
Berlin	36
Frankfurt	35
Nürnberg	34
Augsburg	33
Werder Bremen	28
Braunschweig	11

Serie A

Club	Value
Juventus	282
Roma	213
Napoli	211
Internazionale	153
Milan	138
Fiorentina	128
Lazio	99
Udinese	94
Sampdoria	59
Torino	57
Genoa	53
Atalanta Bergamo	43
Parma	35
Catania	34
Sassuolo	33
Hellas Verona	33
Cagliari Calcio	30
Bologna	23
Livorno	21
Chievo Verona	15