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Is a more exciting LaLiga possible?

¿Es posible lograr LaLiga más emocionante?

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Abstract: The ranking of LaLiga championship for the 2008/09 season was one of the poorest ever in terms of uncertainty. The main aim of this study is to stimulate public interest in the Spanish League championship. To achieve this, an alternative ranking system is proposed using variables derived from soccer's internal logic and the quality of the various teams. Applying Kendall's index of concordance, the two rankings were compared play by play demonstrating the viability of the new model, with different levels of competitiveness. The properties and limitations of the model were compared with the one currently used by LaLiga. Providing a process which makes allowances for the wide range of quality of the teams playing in LaLiga is an alternative intended to foment the competitiveness of the championship.
Keywords: competitiveness, *elo*, football, Kendall, rating, ranking.

Resumen: El objetivo principal de este estudio es estimular el interés público por el campeonato LaLiga. Para ello, se propone un sistema de clasificación alternativo que utiliza variables derivadas de la lógica interna del fútbol y la calidad de los distintos equipos. Aplicando el índice de concordancia de Kendall, las dos clasificaciones se compararon partido a partido, demostrando la viabilidad del nuevo modelo con distintos niveles de competitividad. Las propiedades y limitaciones del modelo fueron comparadas con el modelo empleado actualmente en LaLiga. Proporcionar un proceso que tenga en cuenta la amplia gama de calidad de los equipos que juegan en LaLiga es una alternativa destinada a fomentar la competitividad del campeonato.
Palabras clave: competitividad, *elo*, futbol, Kendall, rating, ranking.

Introduction

Given the pitiable inequality of competition in Spanish League football (LaLiga), caused by the evident superiority of a very few teams to over the rest, we propose an alternative model to the one in place, in order to rank the teams in a way which could be perceived as more attractive by spectators. This new model will include indicators that go beyond simply winning, losing or drawing and will also take into account each team's place in the ranking at the outset of the match when determining its placement at the end of it. The current classification system is analysed and an argument will be offered in favour of introducing new elements to improved it. With the help of procedures used in an *elo* system already applied to other activities it can be shown that there are ways to make the Spanish League more interesting than it is at present. There are many classification systems in the world of sport, several sometimes for the same sport depending on the country in which it is played. However, the question is: what is the perfect method of classification? The truth is that it doesn't exist. In 1951 the mathematician and economist Kenneth Arrow showed that it is not possible to devise an optimal classification system which also meets minimum equity criteria (Arrow, 1963). In addition, controversy regarding one system of classification versus another may be influenced by economic factors, especially since sport (Puig & Heinemann, 1991) is perceived as a spectator spectacle (Pritchard & Kharouf, 2016).

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Theoretic Framework

Theory

Is football as played in the Spanish League competitive? If any team in the League could reasonably be expected to occupy any position in the League at the end of the season, then it could be considered to be so. However in the past decade only three teams have succeeded in becoming champions. Increasing competitivity in football is not unconnected with economics (Dewenter & Namini, 2013) or sustainability of a sport competition (Lindsey, 2008). Achieving a sufficient competitiveness could be vital for justifying sports outlay (Lenten, 2015). A previous effort to make football more of a spectacle gave rise to a change in the points awarded but with limited success at best (Puterman & Wang, 2011). It is certain that several recent studies have commented on the lack of competitiveness in Spanish League football (Burillo, Pérez-González & Salinero, 2012; Criado, García, Pedroche & Romance, 2013; Pinilla, Negrin, & González-Martel, 2019).

Competitiveness is considered to have three sources: (i) uncertainty about the outcome of a given game between two teams, (ii) uncertainty about which place the clubs will attain in the league table, (iii) and uncertainty about who will win

the championship (Szymanski, 2003). Competitive balance has been assessed by various methodologies. One sport may be competitive whenever the result is unpredictable (Ben-Naim, Vazquez & Redner, 2007), while another system identifies competitive structures near to symmetry from an ideal model of competitiveness (Merrit & Clauset, 2013).

Basketball has been studied using the Hirschman-Herfindal index, counting the number of championship wins and the wins achieved per team (García-Unanue, Godoy, Villarrubia, Sánchez-Sánchez & Gallardo, 2014). Another system is based on the point difference between teams (Bowman, Lambrinos & Ashman, 2012) and there is a proposal to use permutations to compare rankings amongst other indicators (Pedroche & Verdoy, 2014). From the point of view of complex system theory, suggestions based on Shannon entropy have been put forward (de Saá et al., 2012). In relation to the creation of alternative rankings some researchers have concentrated on achieving dynamic rankings based on temporary centralised networks (Motegi & Masuda, 2012), although they have not been the only ones to devise alternative rankings (Park & Yook, 2012). This paper is founded on known contributions which have questioned the current ranking systems in various activities, to prepare a fairer and more intriguing ranking for the spectator (Stefani & Pollard, 2007). Incorporating an indicator which is not just the goal scored is an important problem of interpretation. Our vision is that football could benefit if other aspects of the game and not just winning, losing and drawing are valued. The problem of the bipolarity of Spanish League football in recent years is well documented (Marca, 2011). On one side are the economically advantaged clubs, Real Madrid and Barcelona, which are matched evenly throughout the championship until the last game; and, on the other side, all the other teams. Although this study focuses on overall interest on the part of the football fan, it is a fact that most football followers find the league interesting when Real Madrid and Barcelona are matched to the championship final until the last game, and this is not the general rule. For instance, in 2008/09, four games from the final, the difference was already 7 points plus the goal average between the leader and the runner-up, therefore excitement about the end result of the League was non-existent when Real Madrid lost all its remaining games and Barcelona lost two and drew two. Taking as a hypothesis that a team is as likely to win as to draw or lose, with four games to go, there are different and equally probable combinations for the eventual winner of the league. With the traditional point system the points each team can get are expressed as follows.

Points	0	1	2	3	4	5	6	7	8	9	10	12	Total
Frecuency	1	4	6	8	13	12	10	12	6	4	4	1	81

Thus the probability that the second-runner can overtake the leader by obtaining at least eight points more is:

The *elo* system

It seems reasonable to argue that the problem of measuring the ability of any player in any discipline should be approached from the long-term perspective. This and other ideas are behind the chess ranking system designed by A. Elo that bears his name (Elo, 1978). The random variable which represents the strength of a player is normally distributed (Elo, 1965). Technical considerations in later studies have shown that it is more convenient to use logistical distribution instead, as the results are more accurate due to an easily computable formulation ((Elo, 1978, 8.72) and (Glickman & Jones, 1999)). The *elo* system yields an a priori estimate of the probability of one player beating another. Thus in a match between players *i* and *j* with a rating difference of $\Delta r = r_i - r_j$, according to the logistical model, the probability of player *i* defeating player *j*, E_{ij}, would be:

$$E_{ij} = \frac{1}{1+10^{\frac{-\Delta r}{400}}} \quad (1)$$

If player *i* rated r_i faces another player *j*, his new ranking, r'_i, would be formulated as follows

$$r_i' = r_i + K(S_{ij} - E_{ij}) \quad (2)$$

where *K* is a constant with a preset value, and S_{ij} the result of the contest, generally 1, ½ or 0 according to whether player *i* wins, draws or loses, respectively.

Properties of the elo system

- **The value of** K. The *K* value indicates the maximum value that can alter the ranking of a player (if the model were to predict a 0 and the result of the match was 1, or vice versa). Too low a value for K means that the scores barely change and too high would cause an excessive fluctuation in the rankings. No single value is accepted by all the chess federations but *K* = 16, 24 or 32 is the most generally used while other federations have opted for dynamic values (Glickman & Doan, 2015).
- **Autoregulation.** Should a player exceed the theoretical expectations predicted by the logistical model, the *elo* system corrects that player's rating recognising that it is too low and placing it higher or vice versa.

- **Zero sum.** The *elo* ranking system has the property of zero or constant global sum. That is, in every game the points scored or lost by one player are taken from or added to his opponent's score so that the total points available stay the same throughout the tournament. In the case of competition between the players *i* and *j*:

$$r_i' + r_j' = \left[r_i + K\left(S_{ij} - E_{ij}\right)\right] + \left[r_j + K\left(S_{ji} - E_{ji}\right)\right]$$
$$= r_i + r_j + K\left(S_{ij} - S_{ji}\right) - K(E_{ij} + E_{ji})$$
$$= r_i + r_j + K - K = \qquad r_i + r_j$$

$S_{ij} + S_{ji} = 1 = E_{ij} + E_{ji}$ and the sum total of the ranking remains constant.

Weaknesses of the elo system. The *elo* system has some shortcomings the best known of which are:

- The advantage of **playing white** is not taken into account.
- The number of players in the federation has increased over the last years and, over the course of the various tournaments, the best players acquire the new points brought into the system, giving rise to **inflation**. For example, Bobby Fischer, one of the greatest players ever, was awarded 2780 *elo* points in 1972 which would only qualify as about 8th place in the world nowadays ("Live Chess Rating", 2016).
- Another problematic circumstance, particularly noticeable in playing over the Internet is that of **selective pairing** when a player with a higher rating will only challenge or accept a challenge from an appreciably weaker opponent. As the *elo* system variants online allow for a minimum point gain for the winner, the odd defeat is compensated for by a great number of relatively easy victories.
- **Reliability.** Professor M. Glickman developed a more extensive version of the *elo* system (called Glicko) adding a parameter denominated *rating deviation* which confers a measure of reliability to the rating of the player. For Glickman the reliability of the *elo* rating would depend on the time the player was inactive (Glickman, 2016).

The elo system applied to football. In 1997 Bob Runyan adapted the *elo* system to international soccer as an alternative to the FIFA ranking of the more than 200 world teams (Runyan, 1997). Adapting the *elo* system to football involved weighting the type of game (*K* value), with an adjustment for the team if it was playing at home (100 points more for the home team), and adjustments for the goal spread in the game (raising or lowering the *K* value). Using the same notation as in examples (1) and (2) the formula for calculating the rating is:

$$r' = r + KG(S - E) \quad (3)$$

where K is the weight assigned to the match: 60 for the final stages of the World Cup; 50 for the final stages of continental championships (Eurocup, Cup of America etc), 40 for the qualifying rounds of the continental championships; 30 for other tournaments; 20 for friendlies. The G variable amplifies K and represents the goal spread in a match

- G = 1 a draw or win by one goal.
- G = 1.5 if there is a 2-goal difference.
- G = $\frac{11+N}{8}$ if the goal difference, N, is 3 or more.

The modifier $\Delta r = r_i + 100 - r_j$ is applied to the home team to calculate *E*. This system has been studied in relation to the European leagues. In the study (Mocholí & Sala, 2009), some contributions were made for the study of the Spanish, English and Italian football leagues for the 2008/09 season. The chief modifications were:

- The *K* value increases. The league matches are divided into quartiles if assigned values of 25, 30, 40 and 50, respectively.
- The initial rating of each team was calculated multiplying by 10 the points earned the previous season via the traditional way, and then adding 1250 points. The teams that were promoted received the same allocation of points by the same process as described above but including the average of the points won by the three teams that were relegated.

Kendall coefficient of concordance

The Kendall coefficient of concordance, , measuers the degree of agreement between two judges who evaluate the same set of objects (Kendall & Smith, 1939). This coefficient has undergone many revisions and modifications with much fine tuning and corrections according to the matter being studied. An extensive review of the development of statistical research on the coefficient is available in the following publication (Verbic & Kuzmin, 2009). The Kendall can be used to measure the degree of similarity in rankings for the same data set. This measurement which ranges in absolute value from 0 to 1 depends on the number of inversions of pairs of items that would be needed to change the ranking of one to the ranking of the other, being closest to 1 when concordance is perfect (i.e., the rankings are identical).

In applying this theoretical framework, the main priority of the study is to increase the competitiveness of Spanish League (season 2008/09).

Method

The sample selected for the study consists of the matches played in the Professional Spanish League (LFP) during the 2008/09 season. The data were taken from the official web sites of LFP (Liga de Fútbol Profesional (LFP, 2008), As sport newspaper (AS, 2008), and Cerocero (Ceroacero, 2008). This study was prepared using the spreadsheet Microsoft Excel (version 2008) and the statistical program SPSS (version 21).

Procedure

The *elo* systems described previously will be tweaked to modifying some elements and introducing new ones, in an endeavour to make the spectacle more rewarding and achieve a fairer, more balanced classification which reflects not only the result but also the action on the pitch. To do so, we will introduce some elements from the internal logic (Parlebas, 2001) of the game, related to brand shares or actions that seek to modify the scoreboard and weight them accordingly. We outline the basic aspects of our system which we will describe more fully later.

- We use logistical distribution as a model for rating the teams.
- *K* will be 20 for every game.
- We assigned 1000 points as the initial rating of every team. For the first League matches, the differences of rating in the classification of the previous league were accepted until the dispersion of the new ratings (standard deviation) was more than 20% of the standard deviation of the ratings applicable to the last match of the previous year's season (or if more than 10 matches were played). When the ratings for the last match of the League are not available, we will calculate them using the *successive approximation method* described by Elo (Elo, 1978, 3.4). Rating of all the recently promoted teams is the same and was obtained by averaging the ratings of the teams that had been relegated at the end of the previous season.
- To calculate the new rating for a team a set quantity (*home advantage*) will be added to the home team according to the results of the previous season.
- The contribution of goal spread and number of shots at goalposts and goalmouth of each team will be weighted and distributed according to the Laplace's rule of succession (Feller, 1968).

Home advantage. A statistically clear fact is that home teams (Gómez, Lago-Peñas, Viaño & González-García, 2014; Gómez, Pollard & Luis-Pascual, 2011) register more wins than defeats (Pollard, 1986). 48% home wins were recorded for the season 2007/08, 23% draws and 29% away wins. Interpreting these data according to the *elo* system, and treating draws as half-wins, the home team has a 59.5% chance (48+11.5) of winning as opposed to the 40.5% (29+11.5) of the away team. Incorporating these data into the rating, based on equation (1), will give:

$$\Delta r = -400 \cdot \log\left(\frac{1}{E} - 1\right)$$

and so $\Delta r = -400 \cdot \log\left(\frac{1}{0.595} - 1\right) \simeq 67$. We will apply this value for the previous year's season as added value to the home team and call it "home advantage".

Goals scored, shots at posts and goalmouth. Like Runyan, we counted the goals scored by each team, although we did it for a different reason. We have also incorporated other variables of internal logic such as shots that hit the goalposts and plays finishing in the goalmouth. We weighted these data following the Laplace's rule of succession, which had already successfully applied to other well-known general ranking methods such as the one developed by Keener (Langville & Meyer, 2012). Thus, if *g* is the number of goals scored by a given team in a game and *G* is the total number of goals scored during the match, then the quotient $\frac{g+1}{G+2}$ is the proportion of goals corresponding to the team. In the same way, we compute the shots at posts and goalmouth.

The formulae. With the addition of the information described above we can improve upon the elo system and our formula will be:

$$r' = r + 0.7K(S - E) + 0.2K\left(\frac{g+1}{G+2}\right) + 0.05K\left(\frac{p+1}{P+2}\right) + 0.05K\left(\frac{t+1}{T+2}\right)$$

where:

- and are the new and previous rating, respectively.
- *S* is the match result with a value of 1, ⅓ or 0 according to whether the team wins, draws or loses. With this value, our system will not be zero sum but it does add interest to the spectacle.
- *E* is the value predicted by the logistical model based on the previous season *home advantage*.
- *K* is the weighting assigned. We set *K* = 20 for the whole competition: 70% is distributed in accordance with the result, 20% for the goals scored and the remaining 10% is divided equally between shots at goal and finishing plays.
- *g* represents the team's goals and *G* is the total match goals. Similarly, *p* and *P* represent the goalpost shots and the game total of goalpost shots. Also the same for *t* and *T* concerning the plays finishing in the goalmouth.

Results

Figure 1 sets out a comparative summary between the LPF results for 2008/09 and those that would have been obtai-

ned if the proposed *elo* system described previously had been applied.

Every team started with 1000 points although it must be borne in mind that to assess the initial strength of each one, the results from the previous season were included as Match.

0. The following three columns show three stages in the league development, the first match, the crucial 34th match and the final match. In the first match, the major advances were made by Numancia and Deportivo de la Coruña, who defeated Barcelona and Real Madrid, respectively. Racing de Santander underwent no variation from its original status even though it drew with Sevilla which was slightly better-rated in the *elo* evaluation and made the only shot at goalpost of the match and more finishing plays than Racing (4 times out of 6).

Teams	Rating *elo*					Rating LFP	Ranking	
	Match 0	Start	Match 1	Match34	Match38	Match38	*elo*	LFP
Barcelona	947	1000	993	1234	1216	87	1	1
Real Madrid	1065	1000	993	1193	1168	78	2	2
Sevilla	929	1000	1002	1127	1155	70	3	3
At. Madrid	929	1000	1007	1113	1151	67	4	4
Villareal	1010	1000	998	1090	1127	65	5	5
Valencia	852	1000	1011	1111	1124	62	6	6
Deportivo	858	1000	1013	1107	1114	58	7	7
Málaga	734	1000	999	1104	1100	55	8	8
Mallorca	899	1000	995	1080	1098	51	9	9
Espanyol	834	1000	1009	1062	1091	47	10	10
Almería	858	1000	1012	1069	1065	46	13	11
Racing	905	1000	1000	1055	1071.9	46	11	12
Ath. Bilbao	845	1000	994	1061	1059	44	14	13
Sporting	734	1000	996	1031	1061	43	16	14
Osasuna	804	1000	1003	1048	1071.6	43	12	15
Valladolid	815	1000	997	1059	1051	43	18	16
Getafe	827	1000	1010	1033	1058	42	17	17
Betis	827	1000	994	1054	1064	42	15	18
Numancia	734	1000	1013	1028	1032	35	19	19
Recreativo	809	1000	1012	1035	1019	33	20	20
					CCV cv=0.044	cv=0.268	τ=0.916	

Figure 1. Elo vs traditional ranking (2008/09).

Moreover, the use of decimals in the last match of the season resolves the tie between teams with the same whole figure points, such as Racing and Osasuna. The first ten teams occupy the same positions in both ranking systems. The team which registered most divergence according to methodology was Betis which should not have been relegated while Valladolid should have been (and, incidentally, was, the following season). On the last line of the table is included an estimate of the relative dispersion of the two rankings using the Pearson variation coefficient, indicating that the data obtained from the proposal method are closer. This means that some teams could change their positions in the table, adding uncertainty to the classification. It is also included Kendall's correlation coefficient for the two rankings showing a high degree of concordance (0.916) with a bilateral significance level of 0.01. Competitivity for the Spanish League championship for the 2008/09 season showed different Kendall concordance levels from one match to the next in both formats (Figure 2).

After determining the average concordance, the model currently used by the League gives a higher value (0.907) than the alternative ranking proposed (0.870). Some synchronicity was observed between the two curves in general although the changes in competitiveness were not as pronounced in the traditional league ranking as can be seen from the flowchart.

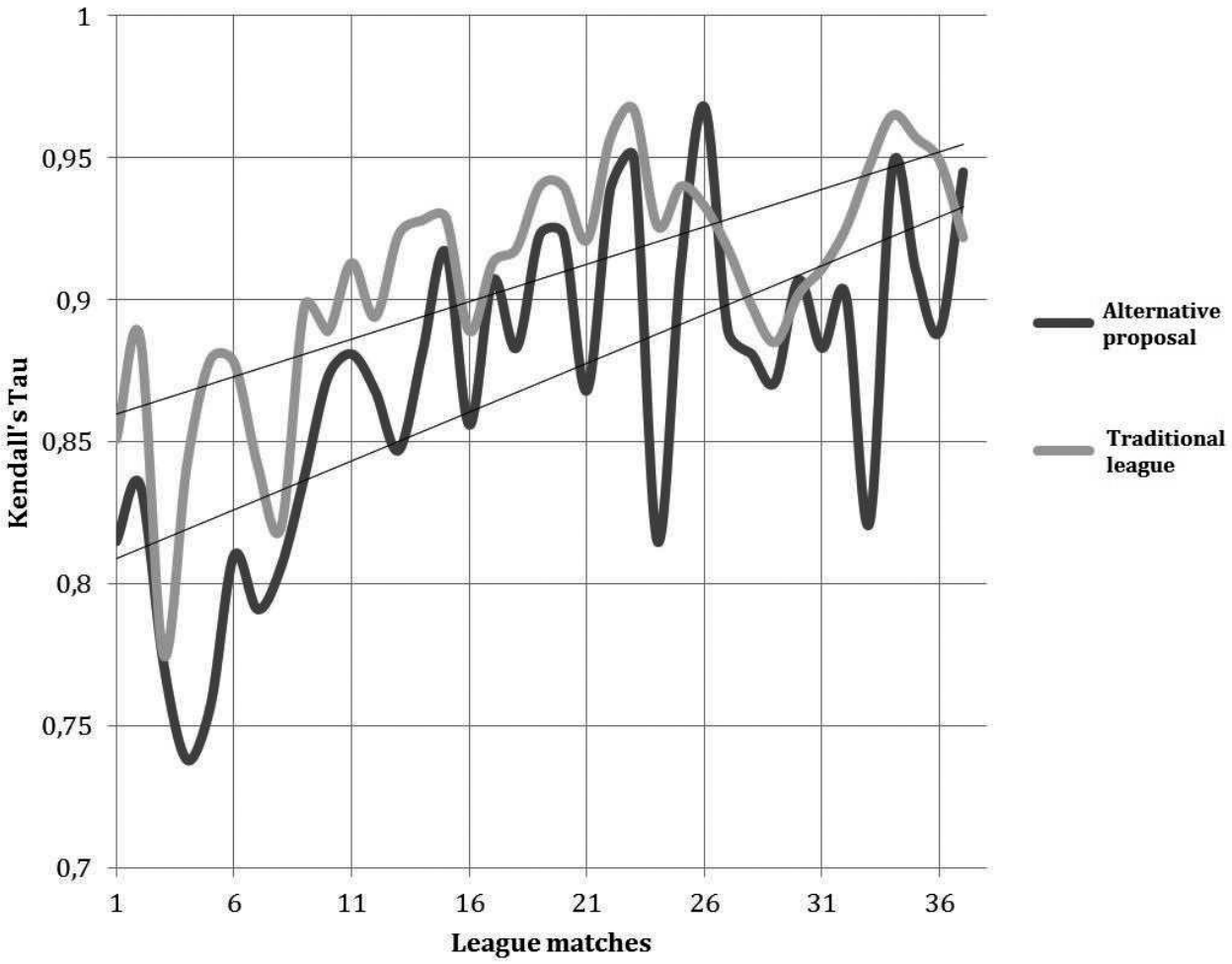

Figure 2. Competitiveness in Spanish League (season 2008-09) according to Kendall's.

The behaviour of the regression lines, consisting of time series, indicated the tendency of both rankings to reduce competitiveness as the season progresses inasmuch as both showed increased Kendall values. Figure 1 shows that after Match 34 the leader was 41 points ahead of the team in second place. An analogous study to that conducted at the end of *Theory* section was less reliable since the points to be awarded depended on several factors, such as how many points a win, draw or loss against rivals with an *elo* average would represent for either of the two leaders and assuming that variations that variations due to the possible goal spread, shots at the posts and goalmouth were balanced out. The *elo* average for the other teams was 1,070 points and the points each team would earn is as follows:

Barcelona		
Win	Draw	Lose
+8	-2	-9

Real Madrid		
Win	Draw	Lose
+9	-2	-7

Thus, the range of points available to Barcelona and frequency is as shown in the table:

Points	-36	-29	-22	-19	-15	-12	-8	-5	-2	2	5	12	15	22	32	Total
Frecuency	1	4	6	4	4	12	1	12	6	4	12	6	4	4	1	81

For Real Madrid, the range of points available was different:

Points	-28	-23	-18	-13	-12	-8	-7	-2	3	4	9	14	20	25	36	Total
Frecuency	1	4	6	4	4	1	12	12	4	6	12	6	4	4	1	81

The probability of Real Madrid making up the 41 points difference from the leader (taking half of any draws as points in its favour) is as follows:

$$P(\text{Madrid leader}) = \frac{1 \cdot 27 + 4 \cdot 15 + 6 \cdot 9 + 4 \cdot 5 + 4 + 12 + 1 + 6}{81^2} \simeq 0.028 \implies 2.8\,\%$$

Discussion

This work was intended to compare the levels of competitiveness in the 2008/09 Spanish League championship in two formats: the classic ranking system and an alternative model. For this purpose, indicators of internal logic were selected including success in football (goals) among others, but also assessment of the quality of both sides. The object was to make the league more competitive. The discussion about which indicators would and would not conducive to a ranking which attracts spectators and increases the competitiveness of the teams within the ranking was central to our argument.

Based on possible inconsistencies that have been identified in the complex elaboration of rankings (Kendall & Smith, 1939; Motegi & Masuda, 2012; Puterman & Wang, 2011; Stefani & Pollard, 2007), our proposal was intended to correct the low competitivity of the League and the bipolar effect (Montes & Sala, 2011). The Spanish League championship season 2008/09 has already been analysed from an economic point of view (Mocholí & Sala, 2009). After the teams had been given an *elo* rating divergences could be observed for our results due to different methodological approaches such as the different conception of *K* and the initial rating.

Taking the measure of the underlying competitiveness in ranking European football by positional changes within it, among other indicators, has already been tried (Criado et al., 2013) and has been the methodological approach adopted for this study to identify competitiveness in football. This method is well-documented in studies of the competitiveness of the European basketball leagues (Pedroche & Verdoy, 2014).

The strengths and weaknesses of the *elo* system were reviewed before it was applied to see if it was suitable as a ranking system for the subject under study. Some indicators of internal logic were added to this ranking system and the choice of these instead of the current football ranking indicators always provokes controversy. This study shows that the new ranking affords greater levels of competitiveness and greater relevance and accuracy and is therefore a viable alternative to the current model. The new ranking is more change-sensitive, gaining in accuracy and validity as it takes into account indicators traditionally ignored but suitable for measuring achievement in football matches.

Kendall's coefficient of concordance confirms that greater competitivity is provided by this ranking format. The evolution of the regression lines in Figure 2 exhibits the differences between the ranking models analysed. However, the line that interpolates the concordance between one match and the next in the proposed ranking is always lower indicating a greater degree of disagreement or competitiveness. The study of the Pearson correlation coefficient applied to the final ratings in the league also reveals fewer disparities among the teams in both models which makes the new ranking more change-sensitive.

A comparison of the rankings for the later matches of the League show that it would be surprising if the runner-up were to win the championship, but the chance of this happening is almost twice as much according to the alternative system. It should be noted that this percentage supports an extra variation range since the leading team's losses could be at home with more points lost, or the second team could score goals playing away against highly-rated teams.

Therefore, these teams are perceived as closer, principally because they can lose points. As far as the other teams are concerned, the distance between any two of them was never as pronounced as that between the two leaders which would suggest that their relative positions in the ranking will vary more by using the new format. Any selection of indicators for a ranking involves choice and rejection, together with some social modelling. Opinions will always differ about the validity of the indicators selected to increase the sport consumption (Pritchard & Kharouf, 2016).

The impossibility of an ideal classification is a fact, and using ranking tools to create a model for one type of society will give rise to a social model of that type. Objectives such as fair play by the teams is an instance of this, although not the only one. To inculcate sporting values, the emergence of desirable patterns of play or behaviour could conceivably be rewarded by a team receiving points equivalent to those for a goal at the end of a match in which it has received no cards or committed fewer than five fouls, for instance. This study is a preliminary exploration of the inclusion of indicators of internal logic in deciding rankings, but is not conclusive and leaves the door open for further refinements in the selection of indicators and procedures to improve the validity and accuracy of rankings intended to bring the practice of soccer and ranking closer.

Among the applications of this study, detecting the achievements made by the teams and increasing the competitiveness of the championships was a priority. However, its

application is not exclusive to football or professional sports. Other sports can apply similar tools to detect levels of competitiveness in their championships, after adapting their respective specific indicators. Through the use of a similar tool, the promotion of fair play could be favored, including other indicators in the equation.

Conclusions

This study was devised to address a historical problem affecting the Spanish League since what happened during the 2008/09 season cannot be considered as an exception to the rule. It is intended to be a step forward from other researches which have concentrated on questioning the validity of ranking systems, the use of *elo* methodologies or the application of new systems to identify uncertainty.

A ranking system was constructed by fusing alternative indicators and an *elo* methodology for calibrating teams. The feasibility of the proposed model and the insight it offers compared to the classic ranking model used by the League could increase competitiveness. A new system for rating teams could result in greater interest on the part of the public and an improvement in the competitive health of the League.

Greater accuracy and validity in this tool, although further refinements are needed in the selection of indicators and methodologies to close the gap between what happens on the ground and the design of alternative rankings. Both the loyalty of the spectators and profitability might benefit if the League were to be perceived as more competitive.

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