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Who will go down this year ?
The Determinants of Promotion and Relegation in European Soccer Leagues

Jean-Baptiste Dherbecourt et Bastien Drut

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Jean-Baptiste Dherbecourt[a] and Bastien Drut[b,c]

a Ecole doctorale de l'Ecole Polytechnique,
91128 Palaiseau Cedex, France
jb.dherb@gmail.com

b Centre Emile Bernheim, Solvay Brussels School of Economics and Management, Université Libre de Bruxelles, Av. F.D. Roosevelt, 50, CP 145/1 1050 Brussels, Belgium.

c EconomiX-CNRS, Paris Ouest Nanterre La Défense University,200 Avenue de la République, Nanterre 92001, France
bastien.drut@gmail.com (corresponding author)

Abstract

Contributing to the lively debate on closed leagues (North American model) versus open leagues (European model) in professional sport league, this paper aims at determining the drivers of promotion and relegation in the major European soccer leagues. Using a large and original dataset (for example: club's link with a billionaire, club listed in the stock market, etc.) and logistic regressions, our results show that institutional factors matter to settle in the elite. It also indicates that open leagues system in European soccer championships is de facto very similar to closed leagues system. Furthermore, our forecasting model can be of interest for soccer investors or bookmakers.

1. Introduction

European soccer leagues are one of the most popular sportive organizations in the world. One of their major originality in comparison with American sport leagues (see Andreff, 2006, for an exhaustive comparison) is that the membership is not fixed over time: sportive performances during the season determine whether a club shall be promoted in superior division or relegated to inferior division. Noll (2002), Ross and Szymanski (2002) and Szymanski (2006) detail how this format was put in place at the creation of English football league in 1888[1]. This format was expanded to other European soccer leagues and still remains[2]. However, debates occured in the sport press and soccer institutions, for years. On one hand, some support the North-American model where leagues are closed and members are the same season after season and, on the other hand, there are supporters of the European model with open leagues based on promotion and relegation system. This debate also takes place on a European scale: Hoehn and Szymanski (1999) propose the architecture of a European Superleague.

The structure of professional soccer leagues has already been studied, especially its financial impact (Noll, 2002, Szymanski and Valetti, 2005). Noll (2002) explores the economic impact of the promotion and relegation system in professional sport leagues in general: he argues promotion and relegation system tends to spread teams' quality in the higher division of a league. This would arise from the profit incentives balance created by such a system. Indeed, in a closed league, incentives are not affected by the fact that the weakest teams will be relegated, which results in reducing the gap between top and bottom teams. On the contrary, opportunity of promotion (and of getting related profits), and fear of relegation, will encourage teams to improve their own quality. Szymanski and Valetti (2005) further show that promotion and relegation system enhances sportive effort incentives (avoiding relegation strongly exacerbates the competition between bottom teams) but diminishes the incentive to share incomes: top teams would tend to invest so as to maintain a higher level, widening the gap with bottom teams. Both Noll (2002) and Szymanski and Valletti (2005) bring empirical support to their theoretical model by taking the example of the English football League. However, they only focus on the economic impact of the promotion

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[1] A second division was set in 1893 and the system of promotion of the best teams of the second division and relegation of the worst of the first division was set in 1898.
[2] The promotion and relegation system remained in Europe, even if many rules changes occurred in practice. Noll (2002) details these changes in the case of the English league since its creation.

and relegation system and to our knowledge, and as noticed by Matheson (2006) in his literature review on European soccer and by Szymanski (2006), there has been no work focusing on the determinants of the teams' promotion and relegation. This is striking considering the stakes linked with promotion and relegation. Indeed, beside sport betting or fans' disappointment, sportive relegation is often a financial drama: the club has to sell its best players, it loses revenues from sponsors and broadcasting rights, it might have to fire staff members, etc. Thus, the possibility to forecast promotion and relegation could help to make economic decisions. Noll (2002) documents well the concentration of top teams in English Premier League, giving the intuition that elite teams are more likely to stay in the elite the season after. However, a wide range of statistics remains unused in the study of promotion and relegation. Though, it is interesting to understand whether cultural and economical factors play a role in the location of elite soccer teams: for example, Kuper and Szymanski (2009) relate soccer clubs location in Europe to the industrial revolution.

This paper aims at filling the gap, taking the particular cases of the five major European soccer leagues (England, France, Germany, Italy, and Spain); the promotion and relegation system being almost the same among these five championships. Our main objective is to propose a model able to forecast promotion for second division clubs and relegation for first division clubs. As relegation for a football club can be considered similar in the sportive sphere to a bond default in the financial sphere, we employ logistic regressions in the same way than papers studying sovereign bond defaults (for example Catao and Sutton, 2002, Manasse *et al.*, 2003). Indeed, logistic regressions aim at explaining binary variables. In the vein of Manasse *et al.* (2003), we propose an early warning system to detect, before the beginning of the sportive season, clubs for which the probability of relegation is high. Besides, due to the lack of previous studies on this topic, this investigation is exploratory and not restrictive concerning the explanatory variables' choice.

The paper is organized as follows: in Section 2, we present the data we use in the study. In Section 3, we report the results of the promotion/relegation empirical determinants' analysis for the major European football leagues. Section 4 proposes an out-of-sample forecast of promotion and relegation for the 2008/2009 season. Section 5 concludes.

2. Data

We focus on the five most important European soccer leagues[3] according to the Union of European Football Associations (UEFA) ranking in 2009, that is to say England, France, Germany, Italy and Spain. The study is restricted to the sportive seasons from 2004/2005 to 2008/2009 because the leagues' size and promotion/relegation rules were different during previous seasons. The system of relegation is the same among these five leagues: the three teams at the bottom of the first division are relegated to the second division. The promotion system is also very similar: in France, Germany and Spain, the three first teams of the second division are promoted in the first division while in England and Italy, the two first teams are directly promoted and the third team promoted is the winner of play-offs involving the third to the sixth teams of the second division. There is a particularity in Italy: play-offs may be avoided if the third ranked club of the second division has 10 points more than the fourth ranked club and if so, is promoted[4]. The size of the first divisions ranges from 18 to 20 and the size of the second divisions ranges from 18 to 24, that makes possible the comparison across the leagues. Final league tables are downloaded from the websites of the different national leagues. This study only takes into account promotion and relegation through sportive results: for this reason, we do as if FC Messina Peloro was relegated for the season 2005/2006 in Italy instead of Juventus FC which was administratively relegated because of a match fixing scandal.

Considering the sample itself, we notice a kind of yo-yo effect, already noticed by Noll (2002) with eleven clubs (Birmingham City FC, SM Caen, MSV Duisburg, US Lecce, Levante UD, FC Metz, FC Nantes, CD Numancia, FC Hansa Rostock, RC Strasbourg, West Bromwitch Albion FC) relegated twice from the first division during the five seasons of the study and four clubs promoted twice (Birmingham City FC, MSV Duisburg, FC Köln, Sunderland AFC). The two most representative clubs of this phenomenon are Birmingham City FC and MSV Duisburg with two relegations and two promotions in five years.

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[3] The Deloitte Football Money League report (2007) and the Financial Action Task Force (2009) also identify these five leagues as the five "big ones". The Deloitte Football Money League (2007) reports that the overall revenues for the top tier clubs of these five leagues represent € 5.2 billions.

[4] On the five study seasons, play-offs were avoided only in the season 2006/2007 where the third club had ten points more than his direct follower, Piacenza Calcio. But the promoted club was always the third ranked club, except in 2004/2005 where Ascoli Calcio, sixth-ranked, won the play-offs.

The main issue in soccer-related studies is the lack of homogeneous data on football clubs. Studying promotion and relegation requires data for each club involved in the first or second division for each league and for each season. It includes 259 distinct European football clubs: 55 in England, 47 in France, 48 in Germany, 55 in Italy and 54 in Spain. However, due to a lack of data availability, financial variables like total sales, players' wages or revenues from transfers cannot be used here: some reports like the yearly Deloitte *Football Money League* or the Forbes *Most Valuable Soccer Teams*[5] provide detailed financial data on top European soccer teams. However, to our knowledge, there is no such database or data source for alle the European clubs in the two first divisions in Europe - it is by the way surprising that the Deloitte and Forbes data are so little used in the literature[6]-. It is obvious that financial data would have a strong impact on the sportive results of the clubs: a rich club can hire good players and consequently makes its relegation probability lower and promotion probability higher. But working on a large group of clubs, as it is needed for our study, unfortunately implied to do without such a variable. Three types of variables are considered here: variables concerning the players and the staff, variables concerning institutional factors related to the clubs and variables concerning the economic context of the region in which the clubs are located.

The list of our potential explanatory variables includes:
- the team's average age (Source: http://www.eufo.de/).
- the percentage of foreign players (Source: http://www.eufo.de/).
- the club seniority in the division.
- the coach seniority in the club at the beginning of the season (Source: authors's calculation).
- the participation to an European competition (Source: UEFA).
- the fact that the club has ever won the national cup or the championship since 1980[7].
- the financial link with a billionaire[8] (Source: http://www.forbes.com)

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[5] Deloitte publishes each year a report with detailed financial data on the 20 more lucrative European soccer clubs. Forbes also publishes each year a report on the 25 "most valuable soccer teams" with detailed statistics.
[6] The data could be used to test structural models about top European soccer.
[7] 1980 being the date we retain for the beginning of our football era with the important increase of TV broadcasting rights.
[8] As businessmen and billionaires in particular are more and more involved in European soccer, we built a billionaire dummy with the help of the magazine Forbes, the common reference for billionaires. To do so, we

- club listed on the stock market.

- the presence of a club of the same city in first division.

- the stadium capacity (Source: clubs' websites).

- the club creation date (Source: clubs' websites).

- the city population (Source: http://www.wikipedia.org/ [9]).

- the GDP per capita of the region in which the club is located (Source: Eurostat).

- the 5 years average of GDP growth of the region in which the club is located (Source: OECD).

- the population density of the region in which the club is located (Source: Eurostat).

- the percentage of agriculture and industry in the total employment (Source: OECD).

- the unemployment rate of the region in which the club is located (Source: Eurostat).

- the percentage of the labour force with secondary and tertiary education (Source: OECD).

Descriptive statistics for these variables are in the Table 1 in Appendix for the season 2008/2009. They already give interesting insights. For several variables, there is a strong distinction between first and second division clubs: the percentage of foreign players, the average coach seniority in the club, the stadium capacity, the city population, the percentage of service in total employment in the region and the population density in the region are higher in first division clubs than in second division ones. Then, we notice some heterogeneity across the different leagues: for example, the percentage of foreign players and the stadium capacity are much more important in England and Germany than in France, Italy and Spain. On average, English and German clubs have also been created before French, Italian and Spanish ones.

In order to maximize the sample size, we focus on pooled regressions for the five countries. To do so, we run two panel logistic[10] regressions, one for promotion and the other for relegation, because this model aims at explaining binary variables. In the first (resp. second) one, we consider variables of first division (resp. second division) clubs and the

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collected all the soccer-related news on http://www.forbes.com and we attribute 1 when mention is made of a financial link between a soccer club and a billionaire and 0 otherwise.

[9] Wikipedia proposes the latest data from the national offices of statistics in almost every case.

[10] Probit regressions have also been tried with very similar results.

dependent variable is a dummy being 1 when the club is relegated (resp. promoted) and 0 otherwise. In order to remove biases between distinct leagues and seasons, we take reduced centered figures related to the teams from the same league and season. As many variables appear to be correlated, we adopt a "backward elimination" procedure with a retention threshold of 0,30.

3. Results

In Table 2 (respectively Table 3), the logit regression results are available for relegation (respectively promotion) in the European football leagues for the seasons 2004/2005 to 2008/2009.

Table 2 Logit regression results for relegation in European football leagues 2004/2005 to 2008/2009

	All variables		After backward elimination	
	Coefficient	Prob.	Coefficient	Prob.
Average of players' age	0.19	0.20	0.18	0.22
% of foreign players	-0.08	0.64		
Years of presence in first division	-0.56	0.07	-0.54	0.06
Years of presence of the current coach	-0.21	0.26		
Link with a billionaire	-0.46	0.13	-0.46	0.12
Won something since 1980	-0.14	0.50		
Stadium capacity	-0.27	0.38	-0.37	0.12
Year of the club's creation	-0.01	0.93		
Club is qualified for Europe for the season to come	-0.40	0.08	-0.48	0.03
Club listed on the stock market	0.33	0.15	0.34	0.14
Another club of the same city in first division	0.13	0.66		
City population	-0.26	0.56		
Region: population density	0.49	0.11	0.45	0.10
Region: GDP per capita	0.08	0.83		
Region: GDP growth	-0.16	0.39		
Region: % Agriculture in Total Employment	0.52	0.02	0.52	0.01
Region: % Industry in Total Employment	0.57	0.02	0.68	0.00
Region: % of the labour force with secondary education	-0.39	0.07	-0.33	0.06
Region: % of the labour force with tertiary education	-0.24	0.31	-0.28	0.15
Region: % of unemployment	-0.06	0.79		
McFadden R-squared	19.37%		18.65%	
Observations	490		490	
Observations with dependent variable=1	75		75	

Table 3 Logit regression results for promotion in European football leagues 2004/2005 to 2008/2009

	All variables		After backward elimination	
	Coefficient	Prob.	Coefficient	Prob.
Average of players' age	0.13	0.38		
% of foreign players	-0.01	0.94		
Years of presence in second division (from 1st division)	-0.64	0.05	-0.47	0.03
Years of presence in second division (from 3rd division)	0.12	0.53		
Years of presence of the current coach	-0.21	0.25	-0.21	0.22
Link with a billionaire	2.98	0.05	2.96	0.05
Won something since 1980	0.07	0.64		
Stadium capacity	0.62	0.00	0.58	0.00
Year of the club's creation	0.04	0.80		
Club listed on the stock market	0.27	0.25	0.31	0.15
Another club of the same city in first division	-0.35	0.14	-0.43	0.06
City population	0.29	0.15	0.30	0.12
Region: population density	0.06	0.78		
Region: GDP per capita	-0.18	0.48		
Region: GDP growth	-0.33	0.05	-0.31	0.06
Region: % Agriculture in Total Employment	-0.25	0.21	-0.21	0.15
Region: % Industry in Total Employment	0.22	0.25	0.20	0.27
Region: % of the labour force with secondary education	-0.16	0.31		
Region: % of the labour force with tertiary education	0.00	0.98		
Region: % of unemployment	0.14	0.49	0.28	0.09
McFadden R-squared	14.19%		13.54%	
Observations	530		530	
Observations with dependent variable=1	75		75	

First, the pseudo R² after the "backward elimination" procedure is pretty low for both regressions (0.19 for the relegation regression and 0.13 for the promotion regression). By order of comparison, the same regression is run with a dependent variable being 1 if the club is champion at the end of the season and 0 otherwise, and obtains a pseudo R² equal to 0.45 (see Table 4 in Appendix). An explanation could be that forecasting top teams' results is easier than bottom teams' ones but also mainly that there is a strong heterogeneity between the five different leagues. Despite this quite low predictive power, some interesting insights emerge. After the "backward elimination" procedure, several regional variables remain significant. This indicates clearly that the regional context matters in the location of elite soccer teams.

Concerning the relegation from the first division (see Table 2), the regional context plays a highly significant role: it appears that the more the percentage of services in the total

employment and also the more the percentage of educated regional people, the less the relegation probability. Noticing that almost all the best football clubs in Europe are located in industrial cities (Manchester or Milan for example), Kuper and Szymanski (2009) describe the role of the industrial revolution in the location of soccer clubs in Europe: at this period, soccer was a way for newcomers in industrial towns to socialize. We interpret the significant negative impact of the industry variable on relegation by the decline of industries in Europe in relation with the globalization, this would explain the decline in the elite of clubs from industrial regions, for example Strasbourg and Birmingham in our sample, compared to clubs of services areas.

It sounds obvious that the seniority in the first division and the qualification in European Cup decrease significantly the relegation probability. Indeed, clubs in first division have had access to first division broadcastings rights for several years, important matchday revenues and had the time to build high level teams. Moreover, clubs qualified in European Competition must have had very good players the former season to qualify. The stadium capacity variable, even if less significant, goes in the same way: this can be interpreted by the fact that having a big stadium allows you to receive important matchday revenues and in some cases stadium naming revenues[11]. It can also ease access to credit. Actually, these variables are the illustration of elite reproduction and fully validate the theoretical findings of Szymanski and Valetti (2005): incomes are little shared in the soccer elite and a hard core of a bit more than 10 clubs is durably set in each league. The process is self-reinforcing because belonging to the elite for years makes the club earn more money and allows hiring good players, what diminishes the relegation probability.

Concerning the promotion regression (Table 3), the most significant variable is the stadium capacity. Again, having a big stadium allows clubs to obtain important revenues and induces a strong relative difference between second division clubs. This could encourage the return in the elite of top clubs "accidentally" demoted, that is to say demoted while they had the financial and sportive means to stay in the first division. Besides, the impact of the seniority in second division is asymmetric, depending on the origin (first or third division): it is only significant for clubs coming from the first division (p-value=0.03). As suggested by

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[11] The most famous example is Arsenal FC: the club concluded a 15 years naming deal for its new stadium with Emirates airlines for more than GBP 100 millions.

Hoehn and Szymanski (1999), demoted clubs from first division are more likely to be promoted the years following the relegation. After what, they get bogged down in second division, a priori because they progressively lose first division financial means. This is related to the yo-yo effect underlined by Noll (2002).

Another interesting point is that presence of another team of the same city in first division significantly (p=0.06) decreases the promotion probability, indicating that Barcelona, Liverpool, London, Manchester, Milan or Madrid would stay exceptions in European soccer. Like Kuper and Szymanski (2009), we interpret this by the fact that the majority of resources in terms of attendance and matchday revenues already belongs to the principal football club of the city and is unable to develop durably.

The significance of the growth and unemployment variables in the promotion regression is striking: clubs of regions with high growth and low unemployment, that is to say in good economic shape, are less likely to be promoted. We do not have credible interpretations for this. Regions in bad economic shape could desire a football club in the elite in order to develop social and entertainment activities for people in economic distress. For cities, it is also a matter of prestige to have a successful football club and it can improve or even build the media-related image of the city. But this interpretation stands also for regions in good economic shape.

Both "Billionaire" and "Stock Market" variables remain after the "backward elimination" procedure in both regressions but their significance strongly differs. The "Billionaire" dummy increases significantly (p-value=0.05) the promotion probability. This is not surprising if one considers the huge amounts of money invested by billionaires in soccer, what tends globally to increase the team's level. Nevertheless, we have to admit that this dummy could be improved by also considering multimillionaires and non billionaires tycoons[12] but we are not aware of such data sources. An astonishing point is the influence of the stock market dummy: it is significant neither for promotion nor for relegation but the sign is the same.

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[12] For example, Mohamed Al Fayed invested in Fulham F.C. in 1997 while the club was in the third division (currently called Football League One) and made the club go in Premier League but he is not considered as billionaire by Forbes.

In both regressions, indicators concerning the teams' average age and the percentage of foreign players fail to be significant at conventional levels. For these two variables, several contradictory phenomena play a role. For example, very young talents can improve the staff quality but this argument holds also for confirmed thirty-year-old players. For the same reasons, the percentage of foreign players has no significant impact here on promotion and relegation: the percentage of foreign players can be an indicator of teams' quality (for example, Liverpool, Chelsea, Arsenal and Internazionale Milano have around 80% of foreign players) but a perfect counterexample is the Athletic Bilbao that has only Basque players and that is the only Spanish club together with Real Madrid and FC Barcelona to have always been member of the first division.

4. Out-of-sample forecast for the season 2008/2009

In this section, we discuss the practical accuracy of our model by running an out-of-sample forecast of promotion and relegation for the season 2008/2009. We run both logistic regressions with data from 2004/2005 to 2007/2008 and compute promotion and relegation probabilities by applying to this model clubs' characteristics known at the beginning of the season 2008/2009. The forecasted probability of relegation (resp. promotion) is presented in Table 5 (resp. Table 6) for each club with the final rank at the end of the season 2008/2009. Promoted and relegated clubs are in bold.

Table 5 Out-of-sample forecast of the relegation probability in European football leagues for the season 2008/2009

England			France			Germany			Italy			Spain		
Club	Relegation Probability	Final Ranking	Club	Relegation Probability	Final Ranking	Club	Relegation Probability	Final Ranking	Club	Relegation Probability	Final Ranking	Club	Relegation Probability	Final Ranking
Stoke	0.57	12	Valenciennes	0.38	12	**Karlsruher**	0.74	17	Atalanta	0.46	11	**Numancia**	0.52	19
West Brom	0.49	20	Grenoble	0.37	13	Bochum	0.30	14	Chievo	0.45	16	Osasuna	0.39	15
Hull	0.36	17	Sochaux	0.32	14	**Bielefeld**	0.26	18	**Lecce**	0.39	20	Malaga	0.31	8
Wigan	0.27	11	**Caen**	0.32	18	**Cottbus**	0.26	16	Catania	0.26	15	Valladolid	0.28	16
Bolton	0.24	13	**Le Havre**	0.29	20	Hannover	0.22	11	Bologna	0.25	17	Almeria	0.24	11
Fulham	0.21	7	Le Mans	0.27	16	Moenchengladbach	0.19	15	Siena	0.19	14	**Huelva**	0.24	20
Portsmouth	0.19	14	**Nantes**	0.20	19	Köln	0.18	12	Juventus	0.17	2	Villarreal	0.23	5
Blackburn	0.18	15	Lorient	0.18	10	Leverkusen	0.17	9	**Reggina**	0.17	19	Gijon	0.13	14
Middlesbrough	0.16	19	Lille	0.18	5	Wolfsburg	0.13	1	Cagliari	0.14	9	Valencia	0.12	6
Sunderland	0.10	16	Lyon	0.11	3	Stuttgart	0.13	3	Palermo	0.13	8	**Betis**	0.12	18
West Ham	0.06	9	Auxerre	0.10	8	Frankfurt	0.09	13	**Torino**	0.10	18	Getafe	0.08	17
Aston Villa	0.05	6	Nancy	0.09	15	Dortmund	0.08	6	Napoli	0.10	12	Sevilla	0.07	3
Everton	0.03	5	Nice	0.06	9	Hoffenheim	0.07	7	Genoa	0.05	5	Espanyol	0.07	10
Tottenham	0.03	8	Toulouse	0.04	4	Bayern	0.06	2	Fiorentina	0.05	4	Santander	0.06	12
Newcastle	0.01	18	St. Etienne	0.03	17	Bremen	0.06	10	Inter	0.03	1	Ath. Bilbao	0.06	13
Manchester City	0.01	10	Bordeaux	0.02	1	Schalke	0.03	8	Udinese	0.02	7	Mallorca	0.04	9
Chelsea	0.01	3	Monaco	0.02	11	Hertha	0.02	4	Sampdoria	0.02	13	La Coruna	0.02	7
Liverpool	0.01	2	PSG	0.01	6	Hamburger	0.01	5	Lazio	0.02	10	Atl. Madrid	0.01	4
Arsenal	0.00	4	Rennes	0.00	7				AS Roma	0.00	6	Barcelona	0.00	1
Manchester Utd	0.00	1	Marseille	0.00	2				AC Milan	0.00	3	Real Madrid	0.00	2

Table 6 Out-of-sample forecast of the promotion probability in European football leagues for the season 2008/2009

	England			France			Germany			Italy			Spain	
Club	Promotion Probability	Final Ranking	Club	Promotion Probability	Final Ranking	Club	Promotion Probability	Final Ranking	Club	Promotion Probability	Final Ranking	Club	Promotion Probability	Final Ranking
Birmingham	0.55	2	**Lens**	0.64	1	Duisburg	0.41	6	**Parma**	0.41	2	**Zaragoza**	0.35	2
Sheffield Utd	0.41	3	Strasbourg	0.50	4	Rostock	0.35	13	**Bari**	0.28	1	Elche	0.26	12
Derby	0.27	18	Metz	0.41	5	Kaiserslautern	0.28	7	**Livorno**	0.22	3	Celta Vigo	0.25	17
Sheffield Wed	0.26	12	Sedan	0.21	9	Frankfurt	0.26	15	Empoli	0.21	5	Real Sociedad	0.24	6
Coventry	0.19	17	Amiens	0.21	18	Oberhausen	0.23	9	Avellino	0.17	21	Alicante	0.23	20
Southampton	0.19	23	Troyes	0.20	19	Aachen	0.21	4	Triestina	0.16	8	Hercules	0.22	4
Wolves	0.17	1	**Montpellier**	0.11	2	**Mainz**	0.17	2	Ascoli	0.16	16	Sevilla Atl.	0.20	22
Preston	0.16	6	Reims	0.10	20	**Nurnberg**	0.15	3	Salernitana	0.15	14	Levante	0.19	8
Burnley	0.11	5	Tours	0.09	6	Munich 1860	0.14	12	Modena	0.14	15	Murcia	0.16	14
Barnsley	0.10	20	Nimes	0.09	17	St. Pauli	0.14	8	Mantova	0.14	13	Castellon	0.11	7
Charlton	0.09	24	Dijon	0.08	8	Wehen	0.11	18	Albinoleffe	0.14	9	Alaves	0.10	19
Crystal Palace	0.06	15	Clermont	0.06	12	**Freiburg**	0.11	1	Rimini	0.12	18	Gimnastic	0.10	10
Norwich	0.06	22	Angers	0.06	7	Ahlen	0.10	10	Pisa	0.12	20	Salamanca	0.10	9
Watford	0.06	13	**Boulogne**	0.06	3	Koblenz	0.10	14	Piacenza	0.11	10	**Xerez**	0.09	1
Swansea	0.05	8	Guingamp	0.04	13	Augsburg	0.09	11	Treviso	0.09	22	Eibar	0.07	21
QPR	0.04	11	Ajaccio	0.04	16	Furth	0.07	5	Sassuolo	0.09	7	Cordoba	0.06	13
Doncaster	0.04	14	Brest	0.04	14	Osnabruck	0.06	16	Grosseto	0.08	6	Huesca	0.06	11
Plymouth	0.04	21	Chateauroux	0.03	15	Ingolstadt	0.02	17	Brescia	0.07	4	Albacete	0.05	15
Nottingham	0.03	19	Bastia	0.02	11				Ancona	0.05	19	Girona	0.05	16
Cardiff	0.03	7	Vannes	0.01	10				Cittadella	0.04	17	**Tenerife**	0.04	3
Ipswich	0.03	9							Frosinone	0.03	11	Las Palmas	0.04	18
Reading	0.03	4							Vicenza	0.02	12	Vallecano	0.03	5
Blackpool	0.02	16												
Bristol City	0.02	10												

First, if we retain a threshold probability of 0.20 as early signal of promotion and relegation, the model predicts well 10 clubs out of 15 for the relegation and 6 out of 15 for the promotion. In the other way, the model predicts wrongly 19 relegations and 21 promotions. The model forecasts better relegation than promotion, which has to be related with the better pseudo R² of the relegation regression. However, promotion and relegation appear to be not fully predictable by our variables, which is not a surprise given the low predictive power of the regressions shown in Section 3. Two main reasons can be invoked: the lack of financial data and the leagues' heterogeneity. Nevertheless, it gives interesting guidelines for further developments of the model.

In each country, there is a hard core from 8 clubs in Germany to 11 clubs in England in the first division for which the relegation probability is very low (below 0.10). These clubs are also the best ranked at the end of the season 2008/2009. This is linked with findings of Section 3: these groups of top clubs are durably set in the first division and attract financial resources in order to stay in the elite. From these hard cores, only Newcastle was relegated in 2008/2009. This can be considered as an "accident" but one can also assume that the seniority in first division[13] can increase the relegation probability if the club does not win any trophy because it has not access to top clubs revenues (from European championship for example).

Concerning the promotion, results are more dispersive. Forecasts are good in the Italian case with the three clubs promoted (Parma, Bari and Livorno) having the highest promotion probability at the beginning of the season. Except in Germany, the clubs with the highest promotion probability have been promoted (Birmingham FC, RC Lens, Parma and Zaragoza). However, forecasts are clearly inaccurate in Germany with no promoted club in the six clubs with the highest promotion probability.

Some cases are very difficult to forecast. A very good example is Boulogne-sur-Mer in France. This club from Nord-Pas-de-Calais was promoted to Ligue 1 at the end of the season 2008/2009 while its promotion probability was very low (0.06). Explanations of this exploit are very scarce. First, Boulogne-sur-Mer club is not rich at all: when it was promoted from National (the third division) to Ligue 2 at the end of the season 2006/2007, the Direction Nationale du Contrôle de Gestion (DNCG), the French watchdog of football clubs almost forbade the promotion because of insufficient financial resources. Second, the experience of

the players was not exceptional: two years before the promotion in Ligue 1, the club was in the third division and one year before, they had to struggle until the lat game to stay in Ligue 2. Third, the stadium "Stade de la Libération" could accommodate around 8000 spectators at that time, what was few even for a French second division club. Fourth, the coach had not any record[14]. Fifth, Boulogne-sur-Mer had never been in the elite before while there was already three clubs in the region Nord-Pas-de-Calais[15] established in the first or second division for many years. In the case of Boulogne-sur-Mer, the most plausible explanation is the system of play quality put in place and the collective power of the players. Typically, this promotion will offer the "David and Goliath contests" mentioned in Hoehn and Szymanski (1999).

The structure of promotion and relegation leagues lets us think that in the second leagues, except clubs benefiting from exceptional institutional advantages (billionaire on the board, big stadium capacity, etc.), almost each club stands a chance to finish in the upper level.

5. Conclusion

The aim of this paper was to study the empirical determinants of promotion and relegation in the major European soccer leagues. Even if our approach is exploratory, we believe that it yields insights complementing the works of Noll (2002) and Szymanski and Valletti (2005).

In European soccer leagues, a hard core of clubs in the first divisions appears to be very unlikely to be demoted to the lower division. The present study shows that this phenomenon is self-reinforcing. There is a kind of top-league inside the first league: institutional factors like the stadium capacity, the club background, and the link with businessmen contribute to clubs' successfulness. This has for consequence that these clubs are able to compete at the highest level over seasons. Moreover, if one of these top clubs happens to be relegated "accidentally" in the second league, the return in first division the next season is very likely. For these clubs, it results in a yo-yo effect because the club's competitiveness is not high enough to remain in first division but institutional factors support their return in first

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[13] Newcastle had been in the Premier League since the season 1993/1994.

[14] Before being Boulogne-sur-Mer coach, Philippe Montanier had just been the assistant of Robert Nouzaret when he was in charge of Côte d'Ivoire.

division. By contrast, the other clubs have strong difficulties in establishing themselves durably in the first division. To put it in a nutshell, the promotion and relegation system of European football leagues does not correspond to a real open league in which there would be a lot of renewals but rather already looks like closed leagues completed with four or five rotating clubs.

Further research could focus on the reasons why some top clubs established for many years in the first division are sometimes demoted, a possible reason being governance issues. On the contrary, it could be interesting to study the determinants of success stories where clubs originally playing in the third or fourth division succeed in reaching quickly the elite: subsidies, coach personality, staff stability, etc. We also believe that the drivers of promotion and relegation are time-varying and further research could cover their evolution across time.

References

Andreff W. (2006), "New Perspectives in Sports Economics: A European View", *International Association of Sports Economists working paper* N°0605.

Catao L. and B. Sutton (2002), "Sovereign Defaults: the Role of Volatility", *IMF working paper* N°02/149.

Deloitte (2007), "Football Money League: The Reign in Spain", *Deloitte Report*.

Deloitte (2008), "Football Money League: Gate Receipts", *Deloitte Report*.

Deloitte (2009), "Football Money League: Lost in Translation", *Deloitte Report*.

Financial Action Task Force (2009), "Money Laundering through the Football Sector", *FATF Report*.

Hoehn T. and S. Szymanski (1999), "The Americanization of European Football", *Economic Policy*, vol. 28, 205-240.

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[15] RC Lens, Lille OSC, Valenciennes FC.

Kuper S. and S. Szymanski (2009), *Why England Lose: and Other Curious Phenomena Explained*, HarperCollinsPublishers, London.

Manasse P., N. Roubini and A. Schimmelpfennig (2003), "Predicting Sovereign Debt Crises", *IMF working paper* N°03/221.

Matheson V. (2006), "European Football: a Survey of the Literature", in *Handbook of Sports Economics Research*, John Fizel ed., New York.

Noll R. (2002), "The Economics of Promotion and Relegation in Sports Leagues", *Journal of Sports Economics,* vol. 3(2), 169-203.

Ross S. and S. Szymanski (2002), "Open Competition in League Sports", *Wisconsin Law Review*, vol. 3, 625-656.

Szymanski S. (2006), "The Promotion and Relegation System" in *Handbook on the Economics of Sport*, Edward Elgar Publishing Ltd, Cheltenham.

Szymanski S. and T. Valletti (2005), "Promotion and Relegation in Sporting Contests", *Rivista di Politica Economica*, vol. 95(5/6), 3-39.

Appendix

Table 1 Descriptive statistics for the season 2008/2009

	England		France		Germany		Italy		Spain	
	1st div.	2nd div.	1st div.	2nd div.	1st div.	2nd div.	1st div.	2nd div.	1st div.	2nd div.
Average of players' age	26.0	25.7	25.6	25.6	25.6	25.9	26.7	26.4	26.8	26.8
	(1.5)	(1)	(1.4)	(1.2)	(1.1)	(1)	(1.3)	(1.2)	(0.7)	(1.6)
% of foreign players	61.54%	46.53%	39.18%	27.23%	55.53%	35.99%	38.80%	21.14%	37.70%	16.86%
	(13.32%)	(14.22%)	(11.54%)	(12.49%)	(8.43%)	(13.89%)	(13.44%)	(9.05%)	(18.87%)	(10.74%)
Years of presence of the current coach	3.1	1.6	1.5	1.3	1.6	0.9	1.5	0.4	0.9	0.5
	(5.3)	(1.2)	(1.7)	(1.6)	(2.2)	(1.2)	(1.8)	(0.6)	(1.1)	(0.9)
Stadium Capacity	38506	25386	26940	17195	44852	27451	47412	19672	37175	22689
	(13981)	(6631)	(13053)	(9334)	(20043)	(16319)	(22435)	(11541)	(23346)	(11094)
Creation date	1886	1885	1916	1921	1911	1912	1912	1918	1920	1928
	(15)	(12)	(22)	(28)	(23)	(27)	(16)	(18)	(28)	(18)
City Population	2113106	1179251	353590	114592	686088	392579	709041	109725	768974	324451
	(3230911)	(2470605)	(552551)	(77450)	(817291)	(457876)	(795428)	(74468)	(950018)	(235462)
Region: population density	3416	1836	174	107	778	498	240	249	214	184
	(3525)	(2948)	(196)	(85)	(931)	(515)	(102)	(103)	(228)	(150)
Region: GDP per capita	38310	31988	24200	22020	29939	30389	24358	26864	24905	24314
	(24414)	(18754)	(4140)	(1360)	(6810)	(7312)	(5970)	(4986)	(5058)	(4568)
Region: % Agriculture in Total Employment	0.80%	1.38%	3.88%	4.94%	1.76%	2.20%	4.63%	3.42%	4.82%	4.88%
	(0.45%)	(0.69%)	(2%)	(1.66%)	(0.96%)	(0.89%)	(3.27%)	(1.54%)	(3.17%)	(3.22%)
Region: % Industry in Total Employment	19.22%	20.55%	23.26%	23.56%	24.61%	25.36%	25.63%	31.65%	28.81%	30.47%
	(5.14%)	(4.47%)	(4.25%)	(3.66%)	(5.16%)	(4.09%)	(7.31%)	(5.89%)	(4.94%)	(4.79%)
Region: % of the labour force with Secondary Education	45.21%	45.22%	45.98%	44.53%	56.80%	57.69%	44.20%	44.44%	22.61%	22.52%
	(2.82%)	(2.07%)	(3.65%)	(7.26%)	(3.44%)	(1.91%)	(4.37%)	(3.16%)	(2.35%)	(2.13%)
Region: % of the labour force with Tertiary Education	29.95%	28.91%	25.40%	22.94%	24.08%	23.51%	14.59%	14.51%	32.07%	31.63%
	(5.52%)	(4.36%)	(4.43%)	(4.01%)	(3.65%)	(1.82%)	(2.15%)	(1.34%)	(6.42%)	(7.2%)
Region: % of unemployment	6.88%	5.95%	7.82%	8.48%	8.52%	7.16%	6.59%	4.71%	8.39%	8.24%
	(1.43%)	(1.54%)	(1.67%)	(2.06%)	(2.94%)	(2.93%)	(3.65%)	(2.76%)	(2.79%)	(2.37%)

Table 4 Logit regression results for the championship winner in European football leagues 2004/2005 to 2008/2009

	All variables		After backward elimination	
Average of players' age	-0.18	0.62		
% of foreign players	0.24	0.52	0.44	0.14
Years of presence in first division	0.17	0.66		
Years of presence of the current coach	-0.61	0.08	-0.66	0.02
Link with a billionaire	-0.22	0.50		
Won something since 1980	-0.07	0.90		
Stadium capacity	1.90	0.00	2.02	0.00
Year of the club's creation	0.13	0.79		
Club is qualified for Europe for the season to come	1.23	0.01	1.16	0.01
Club listed on the stock market	-0.28	0.37		
Another club of the same city in first division	0.29	0.65		
City population	-1.16	0.13	-1.49	0.01
Region: population density	0.05	0.94		
Region: GDP per capita	0.62	0.36	0.83	0.06
Region: GDP growth	0.53	0.34	0.57	0.17
Region: % Agriculture in Total Employment	0.11	0.87		
Region: % Industry in Total Employment	0.17	0.75		
Region: % of the labour force with secondary education	-0.22	0.70		
Region: % of the labour force with tertiary education	-0.18	0.79		
McFadden R-squared	46.88%		45.22%	
Observations	490		490	
Observations with dependent variable=1	25		25	

Regional variables matter less than for the promotion and relegation regressions. Top teams managed to abstract themselves of the regional context and their performances are more driven by specific variables. Besides, contrary to the promotion and relegation regressions, the percentage of foreign players matters here: the capacity to attract international players helps to win the championship.

A very interesting point is that the probability to be champion decreases with the population of the city. Actually, this finding has to be related to the previous findings of Kuper and Szymanski (2009) who explain that the major clubs are not located in capital cities, these latter having the biggest population. They notice for example that no London club has ever won a European cup.