# What makes non-profit soccer teams run? A panel data approach using a sample of Braga teams

PAULO REIS MOURÃO, PhD[*]
CÉSAR COSTA CIMA, Bachelor[*]

Paulo Reis MOURÃO
Department of Economics, Economics & Management School, University of Minho, Rua Alvaro Dória nº45 6ºesquerdo, 4700 Braga, Portugal
e-mail: paulom@eeg.uminho.pt

César Costa CIMA
Master Course on Social Economics, University of Minho, Rua Alvaro Dória nº45 6ºesquerdo, 4700 Braga, Portugal
e-mail: cesar_rodman@hotmail.com

FINANCIAL THEORY AND
PRACTICE
36 (2) 199-220 (2012)

PAULO REIS MOURÃO, CÉSAR COSTA CIMA:
WHAT MAKES NON-PROFIT SOCCER TEAMS RUN? A PANEL DATA APPROACH USING A SAMPLE OF BRAGA
TEAMS

200

**Abstract**

*Amateur soccer teams are influenced by different local and regional factors from professional soccer teams. This article revisits the literature on the determinants of soccer performance and the sustainability of non-profit organizations. Using panel data techniques, we conclude that the outcomes of non-profit soccer teams depend on specific local markets and on the institutional environments of non-profit organizations.*

*Keywords: non-profit organizations, soccer, regional institutions*

## 1 INTRODUCTION

Interest in the relationship between socioeconomic development and soccer teams has increased among social scientists. Factors such as population size or the number of teams present in a region strongly influence the performance of a given sports community.

However, previous studies have mainly focused on national cases and concentrate on very specific periods. The current literature also centres primarily on professional sports. We are analyzing the non-profit sports industry; therefore, we have to pay special attention to dimensions that usually are not relevant for professional sports, such as the role of institutions, local dynamics and the support of a few very active members.

On any given weekend in Portugal, for each match played between two professional soccer teams, there are approximately thirty (official) matches played between amateur teams. The numbers of players, managers, coaches, and supporters involved are proportional to the number of matches. However, when we focus on the value-added, computed value of expenditures, or number of fans present at each match we do not find this proportionality. In fact, there is often an inverse relationship because amateur teams are characterized by their low level of expenditures and a small, local, average-sized audience at their matches.

Although the recent literature on the financial sustainability and sporting competitiveness of professional teams is substantial, there have been few studies on amateur and non-profit sports. Therefore, in this work we want to analyze the determinants of the sustainability and competitiveness of amateur and non-profit soccer teams in the Braga (a Portuguese region) Soccer League.

In this work, we test several hypotheses regarding how economic conditions and local institutions influence the competitiveness of these non-profit soccer teams. The paper is structured into five sections. Section 2 contains a review of the literature related to factors involved in the competitiveness of professional sports teams. Section 3 analyzes the role of specific determinants of the competitiveness of non-profit soccer teams. Section 4 discusses the econometric model, our data and analyzes and debates the results. In Section 5, conclusions are presented.

## 2 THE COMPETITIVENESS OF SPORTS TEAMS: A REVIEW OF THE LITERATURE

According to "classical theories" of development, regional development exerts an exogenous influence through linkages to economic activity and society (Oliveira and Lima, 2003). One of the activities affected by regional development is sports.

The most expensive, ambitious and powerful sports organizations and clubs need strong infrastructure and good economic support to sustain their operations (Mourão, 2010). This type of infrastructure and support can only be found in places with strong development indices.

In this context, Coates and Humphreys (2008) highlight the importance of subsidies to the mobility of sports clubs; as an example, they point to the Seattle Supersonics, an NBA team that changed its host city. The Seattle Supersonics were dissatisfied with their former home, Key Arena, and sought to convince the city of Seattle to build a new pavilion.

Those responsible for examining the application refused to grant a new arena to the team, which led to termination of the contract between the team and the city. It was then that Oklahoma City decided to court the Supersonics with a promise to subsidize a new $100 million stadium and a $20 million training centre. The offer convinced the team to move from Seattle.

Hoffmann et al. (2003) also argue that sports development is intertwined with the existence of better infrastructure and increased financial incentives for engaging in or sponsoring sports-related activity.

Scholars such as Downward and Dawson (1999) point to the importance of school attendance patterns and consumption habits as factors in the development of soccer, while Gartner and Pommerehne (1978) highlight the importance of a region's socio-economic institutions in such development. Regarding the importance of institutions, Eric Besson (2008) writes that a well-regulated sport without legal uncertainties is important for conveying a good image of a league, which reinforces the league's attractiveness.

If these effects are evident in sporting activity in general, they are revealed more clearly in activities such as football, which, according to Halicioglu (2006), is the most-played team sport in the world. It also moves the most money worldwide.

Portuguese football/soccer must also be placed in this context. According to Marco Vaza, in "Portugal is still almost a country of soccer," published in *Publico* (29/12/2010); football is by far the most-played sport in Portugal, accounting for almost one-third of federally-funded sport participants. It also produces the most revenue. However, most Portuguese local and regional (district) soccer leagues

FINANCIAL THEORY AND PRACTICE
36 (2) 199-220 (2012)

PAULO REIS MOURÃO, CÉSAR COSTA CIMA:
WHAT MAKES NON-PROFIT SOCCER TEAMS RUN? A PANEL DATA APPROACH USING A SAMPLE OF BRAGA TEAMS

FINANCIAL THEORY AND
PRACTICE
36 (2) 199-220 (2012)

PAULO REIS MOURÃO, CÉSAR COSTA CIMA:
WHAT MAKES NON-PROFIT SOCCER TEAMS RUN? A PANEL DATA APPROACH USING A SAMPLE OF BRAGA
TEAMS

consist of amateur teams. These amateur teams are non-profit organizations focused on developing local activities and promoting sports practice spaces for their associates. Therefore, these teams belong to the third sector[1].

Mourão (2005) provides a deeper analysis of the finances of football; the costs of football teams depend on the divisions in which the teams play and include the costs of salaries, maintenance of infrastructure, and movements of personnel and investments.

Football teams' funding may come from receipts, transfers made by the state, sponsorships, members' contributions, sell sheets, merchandising practices, and bank debt (Mourão, 2005).

In relation to ticket revenues, Leonard (2005) identifies two factors that determine this variable to a greater or lesser extent. Leonard adopts the "gravity model of the social sciences," which posits that there is a force of attraction between two places, influenced by the cost of interaction between them. These costs are a function of the interaction of physical distance between two teams, their proximity to other tourist attractions, interest in a game and the quality of the opponents.

In studies on college American football, Price and Sen (2003) conclude that the quality of rival teams, the spirit of rivalry and within-conference competition positively influence the size of a game's spectatorship, thus generating higher revenues for sports clubs. In addition, and according to Breuer (2009), the demand for tickets to football games increases as the number of teams in a city increases, once again reinforcing the importance of rivalry between local teams (e.g. derbies, in which two local teams compete directly).

Downward and Dawson (1999) argue that the factors responsible for finding matches for teams are divided into two groups: sporting factors and economic factors. Sporting factors include team quality, whether an event is televised, weather conditions and the uncertainty of results. Economic factors include team environment, spectatorship purchasing power and ticket prices. If much of a team's revenue is derived from that club's ticket revenue, and this depends on the purchasing power of the population, it becomes very clear that the "richest supporters or areas ... can leverage more assistance and more revenue" (Mourão, 2005).

In line with Christaller's theory of central places (1933), the level of demand in a given area will initially determine a team's importance and will subsequently influence its growth. Vasquez Barquero (1995) adds that economic development also has an important spatial dimension, arguing that localities and regions are the products of their histories. The case of Portuguese soccer clearly reflects this rea-

---

[1] The following section will explain why we consider the football clubs that we observed to be third sector entities.

lity. Benfica, Porto and Sporting are the most prominent professional teams in the Portuguese league; they are located in the two most developed regions of the country, with more demand and greater football history (Mourão, 2005). Mourão (2005) notes that Portuguese regions with higher levels of development are located on a narrow coastal strip. It is precisely in those areas that local authorities have sustained the Portuguese league.

According to Viseu et al. (2002), the development of sports is significantly influenced by specific conditions that affect access to sports. They report that, to foster access to sports, it is necessary to evaluate the sports market; the number of current and future practitioners, current and future demand for sports services and current need and future sporting venues for a population are crucial factors.

Schemel (1999) cites other factors that should be considered in the planning of sports facilities, such as the existence of transportation networks, accessibility and interfering factors. According to Pires (1989) and Cunha (1989), Lisbon and Porto are the most developed regions in this respect; on the other hand, more than half of the national districts have recently seen some sports development. The most dramatic examples are Bragança, Portalegre and Beja. Given the high quality of top teams from Lisbon and Porto as compared to teams from other districts, the direct relationship between regional development and sports development is once again highlighted.

The research reviewed here focuses on professional sports in postulating a set of determinants and socio-economic factors that might contribute to a greater presence of local sports councils. Consequently, these factors could lead to an increase in the competitiveness of these councils. Factors such as subsidies granted by local clubs, the existence of quality infrastructure, good organizational practices, and consumer habits and/or purchasing power, are likely to enhance the quality of professional sports performance. However, Downward and Dawson (1999), Hoffmann, Ging, Ramasamy and Matheson (2003), and Mourão (2005), studied the most expensive soccer teams. In this work, we study the relevance of the socio-economic determinants of the sports performance of non-profit soccer teams. Therefore, we have to place special attention on non-profit organizations and on the institutions that influence non-profit organizations' actions. The next section discusses these topics.

## 3 THE COMPETITIVENESS OF NON-PROFIT SOCCER TEAMS
### 3.1 DETERMINANTS OF THE COMPETITIVENESS OF NON-PROFIT SOCCER TEAMS

All of the entities considered in this study can be classified as non-profit institutions (Chaves and Monzon, 2001). Although these entities' activities are locally- or regionally-based, they rely on volunteer participation, the promotion of social and regional development and democratic management.

FINANCIAL THEORY AND PRACTICE
36 (2) 199-220 (2012)

PAULO REIS MOURÃO, CÉSAR COSTA CIMA:
WHAT MAKES NON-PROFIT SOCCER TEAMS RUN? A PANEL DATA APPROACH USING A SAMPLE OF BRAGA TEAMS

Following Chaves and Monzon (2001), all local sports clubs are aware of issues that most non-profit institutions pay attention to:
  – their managers work toward society-oriented goals, instead of profit-oriented goals. For instance, they try to organize teams that hold sports exhibitions for local audiences instead of maximizing profits,
  – they are based on associates' will as assessed by votes of general assemblies called for this purpose,
  – most of the active participants (managers, players, and coaches) are volunteers, receiving for their endeavours irregular compensation in the form of prize money.

Mourão and Colonna (2011) studied religious confraternities in Lisbon and Lima and observed that the most socially heterogeneous places and those characterized by stronger histories of associativism show the highest probabilities of having active religious brotherhoods. Following this, we can argue that regions that have greater diversity and are identified with long and consistent histories of associative practices will exhibit more opportunities for the development of non-profit soccer teams.

Despite the importance of policies that effectively enhance cooperation between local, regional and national leaders, we must bear in mind the importance of other factors, such as the surrounding context and resources of a region. Given this study's focus on non-profit soccer teams, it is important to understand the reasons for the creation of such teams, how they are distributed in certain areas and whether there is any relationship between their distribution and other factors.

Prouteau and Wolf (2002) found that non-profit associations are more likely to be found in rural areas and small towns. They also concluded that these associations were mostly sports and cultural organizations. Finally, they reported that parents influenced their children's involvement in these associations, making very clear the importance of a culture of civic participation. Therefore, the development and sustainability of non-profit sports clubs requires the existence of certain socioeconomic conditions.

Having analyzed these studies, we can summarize the determinants of the competitiveness of non-profit soccer clubs:
a) level of economic development of the surrounding area, based on:
  – the level of unemployment (if this is high, it tends to indicate a more industrialized area), as argued by Downward and Dawson (1999),
  – the level of money raised and held in local banks, as a proxy for local income (Ahlfeldt and Feddersen, 2009);
b) size of the aging population, which, if increased in a given area, tends to reduce the demand for soccer matches, as argued by Mourão (2005);

c) number of soccer clubs from the same municipality playing in the same league, which, if increased, tends strongly to suggest a long history of local associative practices and serves as a source of athletic competitiveness, according to Breuer (2009);

d) size of the male population, often a primary market for sports events (Leonard, 2005);

e) size of the overall population living in a region, as a proxy of the centrality of that place in an evolving area and as a proxy for market size (Mourão and Co-lonna, 2011); and

f) size of the young population (between 15 and 24 years) living in a region, be-cause this variable exerts a composition effect on the dynamics of local associa-tions, highlighting the proportional relevance of this age cohort (Prouteau and Wolf, 2002).

### 3.2 HOW TO MEASURE THE COMPETITIVENESS OF NON-PROFIT SPORTS TEAMS

Although there are several studies that attempt to measure the competitiveness of professional sports teams (Szymanski and Kesenne, 2004; Schmidt and Berri, 2001; Horowitz, 1997; Fort and Quirk, 1997), quantification of the competitive-ness of non-profit sports teams does not have a very strong history.

In professional sports, competitiveness is widely understood as an important fea-ture of each player or of each team. The most competitive players and teams un-dergo intensive training, are supported by huge financial resources, and are cen-trally located; they try to achieve the most demanding level of the sport at interna-tional competitions. The traditional measures for evaluating the competitiveness of professional sports consider the amount of points/scores earned by players or teams in a variety of competitions (Szymanski and Kesenne, 2004), the concentra-tion of these points among the few best competitors (Fort and Quirk, 1997), or the average performance (Schmidt and Berri, 2001).

In examining the realm of non-profit sports, some observations must be made. First, as confirmed, non-profit teams are strictly connected with the local society. As observed, the development of non-profit organizations whose actions are con-centrated in a very limited geographical area depends on the demographics, insti-tutions and income of the surrounding area. Therefore, most of these organizations also depend on associative practices, the history of local institutions of sports and cultural activities, and dynamics of some members.

Consequently, there is no consensus on how best to measure the competitiveness of non-profit soccer teams. As observed by Kriemadis and Theakou (2007), many of these organizations are more concerned with producing sporting events for the local community and organizing teams composed by local members than with achieving the best sporting results. However, good sporting results may lead to an

increase in the attention received by these non-profit teams. This attention may also attract more revenues and fundraising; the additional funds may promote a higher level of sporting results the following season. This is the perspective of Heitzmann (2000).

Therefore, to analyze the sporting performance of non-profit clubs from each municipality, we will use two dependent variables:
   a) the sum of the number of points per season obtained by the soccer clubs from each municipality at the end of a regular season of the Braga Soccer League; and
   b) the number of points per match observed for each municipality, considering all the clubs of that municipality at the end of each regular season[2].

In the next section, we introduce our econometric model, the methodology we used to estimate that model and our data. Then we interpret and discuss our results.

## 4 MODEL, DATA AND RESULTS
In this section, we discuss an econometric model to predict the local and regional determinants of the sports performance of non-profit soccer clubs in the Braga Soccer League, conditional on the differences among municipalities.

Our first model is as follows:

$$Y_{it} = \alpha_{it} + \beta * X_{it} + \chi * S_{it} + e_i + z_t + \varepsilon_{it} \qquad (1)$$

In equation (1), $Y_{it}$ relates to one of the dependent variables (number of points and points per match) observed for a given year $t$, between 2000/01 and 2009/10[3], and for each municipality $i$ in the Braga District[4].

$\beta$ is a column of estimated coefficients for the socioeconomic variables that we test: share of the population that is elderly, population, value of raised money in local banks, number of unemployed people, share of population aged between 15 and 24 years, and number of male residents.

$\chi$ is a column of estimated coefficients for the number of soccer clubs of the given municipality playing in the same Braga League.

---

[2] We also tried three other variables for measuring the concentration of competitiveness. First, we observed the average percentage of total possible points earned by a municipality's teams. Second, we computed the average number of points earned by the teams of a given municipality. Third, we calculated the percentage of the points concentrated at each municipality at the end of a regular season. Our conclusions strongly support these alternative dependent variables. Full results are available upon request.

[3] Most of these seasons begin in September of year $t$-1 and finish in May of year $t$. Therefore, the subscript $t$ in the model designates the year of each season's end.

[4] The 14 municipalities belonging to the Braga District are: Amares, Barcelos, Braga, Cabeceiras de Basto, Celorico de Basto, Esposende, Fafe, Guimaráes, Povoa do Lanhoso, Vieira do Minho, Vila Nova de Famalicão, Vila Verde, Vizela and Terras do Bouro.

$e_i$ identifies local fixed effects. $z_t$ identifies time fixed effects. $\varepsilon_{it}$ identifies local and time fixed effects. We estimate $e_i$, $z_t$ and $\varepsilon_{it}$, considering them to be independently and identically distributed. We used STATA v.8 software to estimate equation 1.

First, we ran Hausman tests to evaluate whether equation 1 would be more accurately estimated using fixed or random effects. The results (available by request) suggested that we should use fixed effects independent of the choice of dependent variable.

### 4.1 DATA AND RESULTS

As already stated, we considered as dependent variables ($Y\_it$) either the final sum of points achieved by all the soccer clubs of a given municipality $i$ from the Braga District during a regular season $t$ or the average points per match played[5].

To construct the dependent variables, we used official data kindly provided by the General Secretary of the Braga Soccer Association (AFB) for the seasons between 2000/01 and 2004/2005. For the seasons between 2005/06 and 2009/10, we used official data available on the AFB website.

To construct the set of independent variables in equation 1, we obtained official data from the Portuguese Official Statistics Institute (Instituto Nacional de Estatísticas, INE) for the years between 2000 and 2009. INE provided values for the following variables (observed for each municipality $i$ in the Braga District between 2000 and 2009):

   a) level of unemployment,
   b) amount of money raised and held in local banks,
   c) size of the aging population,
   d) number of soccer clubs from the same municipality playing in the Braga Soccer League,
   e) size of the male population,
   f) size of the overall population living in a municipality, and
   g) size of the young living population (between 15 and 24 years) in a municipality.

Table 1 shows descriptive statistics for our variables.

---

[5] According to the official rules, each win is scored as three points for the winning team, each draw is scored as one point, and each defeat is scored as zero points. Extensive details of the rules related to the main Braga Soccer League are provided in the appendix.

FINANCIAL THEORY AND PRACTICE 36 (2) 199-220 (2012)

PAULO REIS MOURÃO, CÉSAR COSTA CIMA: WHAT MAKES NON-PROFIT SOCCER TEAMS RUN? A PANEL DATA APPROACH USING A SAMPLE OF BRAGA TEAMS

**TABLE 1**

*Descriptive statistics*

| Variable | Obs. | Mean | Std. dev. | Min. | Max. |
|---|---|---|---|---|---|
| Points | 126 | 86.9 | 84.7 | 0 | 0 |
| Points per match | 126 | 1.7 | 0.6 | 0 | 2.4 |
| Number of clubs of the same municipality playing at the same league | 126 | 2.06 | 1.99 | 0 | 10 |
| Aging population (% of population) | 126 | 83.4 | 23.9 | 37.2 | 149.9 |
| Population | 126 | 60,537 | 56,772 | 7,506 | 176,154 |
| Money raised in local banks (thousand euro) | 123 | 100.5 | 118.6 | 1.5 | 473.2 |
| Number of unemployed people | 98 | 3,323 | 3,848 | 388 | 14,113 |
| Number of men | 126 | 29,470 | 27,606 | 3,681 | 84,616 |
| Young population (%) | 126 | 0.15 | 0.01 | 0.12 | 0.19 |

Tables 2 and 3 show the results of estimating equation 1 using the dependent variables mentioned above. Table 2 shows the results, with "the sum of points of all the teams in each municipality" as the dependent variable. Table 3 shows the results, with "the points per match played for the teams in the municipality" as the dependent variable.

Our previous results confirm that the variables "number of clubs in the same municipality", and "young population (%)" have coefficients that are statistically significant. The coefficient on "number of clubs in the same municipality playing in the same league" is statistically significantly different from zero at the 1% level when the number of points achieved by all the clubs from a given municipality is the dependent variable (table 2).

As this result could be due to a kind of scale effect, we also estimated equation 1 with "points per match" as the dependent variable. In this case, we again concluded that the variable "number of clubs in the same municipality playing in the same league" has a statistically significant coefficient, but now the percentage of young people living in the municipality also has a statistically significant coefficient.

In examining the variables that were characterized by statistically insignificant coefficients, other patterns emerge. First, the variables related to the aging of society or to unemployment have insignificant coefficients; this observation supports the relation between non-profit clubs and the youngest groups in society. Second,

we also observe that the male composition of the municipalities exerts no direct influence on the sports performance of the observed non-profit organizations.

T<small>ABLE</small> 2

*Results (dependent variable: points of all clubs of each municipality at the final of a regular season)*

| Points | I | II | III | VI | V | VI | VII |
|---|---|---|---|---|---|---|---|
| Number of clubs of the same municipality playing at the same league | 42.918*** (2.534) | 41.896*** (1.920) | 41.873*** (1.862) | 41.887*** (1.819) | 41.496*** (1.584) | 41.350*** (1.553) | 41.571*** (1.430) |
| Number of men | 0.075 (0.069) | -0.014 (0.022) | -0.014 (0.021) | -0.014 (0.020) | -0.008 (0.015) | -0.001 (0.001) | |
| Population | -0.043 (0.034) | 0.006 (0.009) | 0.006 (0.009) | 0.006 (0.009) | 0.004 (0.008) | | |
| Young population (%) | 0.025 (0.019) | -0.002 (0.006) | -0.002 (0.005) | -0.002 (0.005) | | | |
| Raised money in local banks (euro) | 0.001** (0.0004) | 0.001 (0.001) | 0.001 (0.001) | | | | |
| Aging population (% of population) | -0.882 (0.634) | 0.010 (0.188) | | | | | |
| Number of unemployed | -0.001 (0.002) | | | | | | |
| Constant | 173.82 (265.54) | 0.006 (0.009) | 73.168 (143.080) | 66.499 (136.993) | 12.207 (59.659) | 22.264 (56.257) | 1.446 (7.366) |
| Number of observations | 96 | 123 | 123 | 126 | 126 | 126 | 126 |
| Number of groups | 14 | 14 | 14 | 14 | 14 | 14 | 14 |
| R2 | 0.3141 | 0.3789 | 0.3792 | 0.4682 | 0.9499 | 0.9346 | 0.9592 |
| Test F | 97.72 | 130.86 | 158.55 | 206.85 | 277.78 | 419.32 | 845.07 |

*Note: Standard deviations between parentheses.*

*Significance level: 1%***; 5%**; 10%*.*

In addition, as expected, our results showed no direct link between local income and the sports performance of the observed non-profit clubs, because the proxy "level of raised money in local banks" did not have significant coefficients. Because these non-profit clubs do not play in the most important national leagues (discussed by Mourão, 2010), their sports performance is not very dependent on the per capita income of the evolving area.

Finally, the population variable did not have significant coefficients. This result might show that statistically there is no direct population effect on the dependent variables. However, we also observed (see table 4) that the densest municipalities in the Braga District (Braga and Guimaraes) had the highest numbers of non-pro-

FINANCIAL THEORY AND PRACTICE 36 (2) 199-220 (2012)

PAULO REIS MOURÃO, CÉSAR COSTA CIMA: WHAT MAKES NON-PROFIT SOCCER TEAMS RUN? A PANEL DATA APPROACH USING A SAMPLE OF BRAGA TEAMS

fit soccer clubs. This result is consistent with Mourão and Colonna's (2011) finding of a positive relationship between population density and associative practices. This apparent incongruence leads us to suspect that our fixed effects results could be biased by endogeneity problems.

**TABLE 3**

*Results (dependent variable: points per match of all clubs of each municipality at the final of a regular season)*

| Points per match | I | II | III | VI | V | VI | VII |
|---|---|---|---|---|---|---|---|
| Young population (%) | 147.55** (61.12) | 137.16** (54.59) | 18.67** (8.87) | 18.78** (8.79) | 19.44*** (6.31) | 20.02*** (6.11) | 20.48*** (6.05) |
| Number of clubs of the same municipality playing in the same league | 0.193 (0.116) | 0.184 (0.112) | 0.137* (0.076) | 0.140* (0.074) | 0.170*** (0.056) | 0.162*** (0.052) | 0.163*** (0.052) |
| Population | -0.004* (0.002) | -0.004* (0.002) | 0.0016* (0.0003) | 0.001 (0.001) | 0.001 (0.001) | 0.001 (0.001) | |
| Number of men | 0.008* (0.004) | 0.009* (0.004) | -0.001 (0.001) | -0.001 (0.001) | -0.001 (0.001) | | |
| Aging population (% of population) | 0.121 (0.085) | 0.111 (0.079) | -0.002 (0.007) | | | | |
| Number of unemployed people | -0.001 (0.001) | -0.001 (0.001) | | | | | |
| Money raised in local banks (euro) | -0.001 (0.001) | | | | | | |
| Constant | -38.007 (27.733) | -40.35 (26.77) | 4.25 (6.03) | 4.114 (5.958) | -0.679 (4.275) | -1.545 (3.669) | 0.685 (0.625) |
| Number of observations | 57 | 57 | 77 | 77 | 126 | 126 | 126 |
| Number of groups | 14 | 14 | 14 | 14 | 14 | 14 | 14 |
| R2 | 0.0131 | 0.0684 | 0.0709 | 0.0718 | 0.0386 | 0.0039 | 0.0568 |
| Test F | 1.64 | 1.87 | 1.22 | 1.44 | 3.70 | 4.63 | 6.07 |

*Note: Standard deviations between parentheses.*
*Significance level: 1%\*\*\*; 5%\*\*; 10%\*.*

Therefore, after running the Durbin-Wu-Hausman test for endogeneity of the "number of clubs in the same municipality playing in the same league" variable, we concluded that this variable can be classified as statistically endogenous with the instruments "number of unemployed people", "young population (%)", and "level of money raised in local banks". The same conclusion was reached after running the Durbin-Wu-Hasuman test for endogeneity of the "young population (%)" with the instruments "number of men" and "level of aging population (%)". Full results are available under request.

**TABLE 4**

*An illustrative table*

| Rank (points per match played) | Municipalities | Number of teams at Braga Soccer League | Matches (2000/01-2009/10) | Wins | Draws | Losses | Points | Points per match |
|---|---|---|---|---|---|---|---|---|
| 1º | Vieira | 1 | 186 | 103 | 37 | 46 | 346 | 1,860 |
| 2º | Terras de Bouro | 1 | 64 | 32 | 13 | 19 | 109 | 1,703 |
| 3º | Esposende | 6 | 796 | 343 | 194 | 259 | 1,223 | 1,536 |
| 4º | Guimarães | 17 | 1,842 | 731 | 443 | 662 | 2,636 | 1,431 |
| 5º | Barcelos | 8 | 1,004 | 396 | 235 | 373 | 1,423 | 1,417 |
| 6º | Vizela | 2 | 300 | 111 | 88 | 101 | 421 | 1,403 |
| 7º | Amares | 3 | 120 | 48 | 24 | 48 | 168 | 1,400 |
| 8º | V.n.Famalicão | 8 | 550 | 208 | 140 | 202 | 764 | 1,389 |
| 9º | Povoa de Lanhoso | 1 | 244 | 86 | 75 | 83 | 333 | 1,365 |
| 10º | Vila Verde | 6 | 796 | 290 | 192 | 314 | 1,062 | 1.334 |
| 11º | Fafe | 4 | 634 | 212 | 163 | 259 | 799 | 1,260 |
| 12º | Celorico de Basto | 2 | 308 | 106 | 66 | 136 | 384 | 1,247 |
| 13º | Braga | 14 | 1,291 | 429 | 313 | 549 | 1,600 | 1,239 |
| 14º | Cabeceiras de Basto | 2 | 276 | 93 | 66 | 117 | 341 | 1,236 |

Consequently, as suggested by Wooldridge (2002), we modified equation 1 into a system of simultaneous equations (eq. 2 - eq. 4).

$$y_{it} = \alpha_{1it} + \beta_1 teams_{it} + e_{1i} + z_{1t} + \varepsilon_{1it} \tag{2}$$

$$teams_{it} = \alpha_{2it} + \chi_1 unemployed_{it} + \chi_2 young_{it} + \chi_3 banks_{it} + e_{2i} + z_{2t} + \varepsilon_{2it} \tag{3}$$

$$young_{it} = \alpha_{3it} + \chi_4 men_{it} + \chi_5 aging_{it} + e_{3i} + z_{3t} + \varepsilon_{3it} \tag{4}$$

According to this system of simultaneous equations, $y_{it}$ follows the notation of equation 1 and it relates to number of points and points per match observed for a given year *t*, between 2000/01 and 2009/10, and for each municipality *i* of the Braga District. But now $y_{it}$ only depends on the number of soccer teams observed for municipality *i* in year *t* (eq. 2). Guided by the endogeneity tests, we allow the number of soccer teams to depend on the number of unemployed people, the share of young people and the level of raised money in local banks (eq. 3). We also allow the proportion of young people to depend on the number of men and on the

FINANCIAL THEORY AND PRACTICE 36 (2) 199-220 (2012)

PAULO REIS MOURÃO, CÉSAR COSTA CIMA: WHAT MAKES NON-PROFIT SOCCER TEAMS RUN? A PANEL DATA APPROACH USING A SAMPLE OF BRAGA TEAMS

FINANCIAL THEORY AND
PRACTICE
36 (2) 199-220 (2012)

PAULO REIS MOURÃO, CÉSAR COSTA CIMA:
WHAT MAKES NON-PROFIT SOCCER TEAMS RUN? A PANEL DATA APPROACH USING A SAMPLE OF BRAGA
TEAMS

size of elderly population (eq. 4). $e_{3i}$ represents fixed effects for each municipality. $z_{3t}$ represents fixed effects for each year. $\varepsilon_{3it}$ represent the panel errors, which are assumed to be independently and identically distributed.

Following Wooldridge (2002), this system was estimated by three stage least squares (3SLS). We also estimated the system by the generalized method of moments and full information maximum likelihood; the results were similar and are available on request. Tables 5 and 6 show the results of the systems (using as dependent variables "the sum of points" and "points per match") estimated by 3SLS.

**TABLE 5**

*System of simultaneous equations (estimated by 3SLS)\**

| | Points | Number of clubs of the same municipality playing at the same league | Young population (%) |
|---|---|---|---|
| Number of clubs of the same municipality playing in the same league | 41.520*** (1.223) | | |
| Number of men | | | -2.6e-7*** (4.19e-8) |
| Population | | 2.56e-5 (7.68e-4) | |
| Young population (%) | | 214.492*** (40.635) | |
| Money raised in local banks (euro) | | 8.93e-6** (3.68e-6) | |
| Aging population (% of population) | | | -1.35e-4 (4.87e-5) |
| Number of unemployed people | | 3.79e-4*** (9.79e5) | |
| Constant | 1.809 (3.067) | -32.079*** (6.304) | 0.168*** (0.005) |
| Number of observations | 126 | 126 | 126 |
| Number of groups | 14 | 14 | 14 |
| R2 | 0.957 | 0.106 | 0.324 |
| Qui-Square | 1151.64 | 92.85 | 40.44 |
| P-value | 0.000 | 0.000 | 0.000 |

*\* Endogenous variables: points; number of clubs of the same municipality; young population (%). Exogenous variables: population; number of unemployed; money raised; men; and aging population.*

*Note: Standard deviations between parentheses.*

*Significance level: 1%\*\*\*; 5%\*\*; 10%\*.*

**TABLE 6**

*System of simultaneous equations (estimated by 3SLS)\**

FINANCIAL THEORY AND PRACTICE 36 (2) 199-220 (2012)

PAULO REIS MOURÃO, CÉSAR COSTA CIMA: WHAT MAKES NON-PROFIT SOCCER TEAMS RUN? A PANEL DATA APPROACH USING A SAMPLE OF BRAGA TEAMS

| | Points per match | Number of clubs of the same municipality playing at the same league | Young population (%) |
|---|---|---|---|
| Number of clubs of the same municipality playing in the same league | 0.154*** (0.039) | | |
| Number of men | | | -2.59e-7*** (4.21e-8) |
| Population | | 4e-4 (7.49e-4) | |
| Young population (%) | | 230.65*** (39.79) | |
| Raised money in local banks (euro) | | 8.95e-6** (3.6e-6) | |
| Aging population (% of population) | | | -1.29e-4*** (4.9e-5) |
| Number of unemployed people | | 3.77e-4*** (9.59e-5) | |
| Constant | 0.850*** (0.099) | -34.608*** (6,176) | 0.167*** (0.005) |
| Number of observations | 126 | 126 | 126 |
| Number of groups | 14 | 14 | 14 |
| R2 | 0.518 | 0.266 | 0.324 |
| Qui-Square | 149.4 | 94.98 | 40.2 |
| P-value | 0.000 | 0.000 | 0.000 |

*\* Endogenous variables: points; number of clubs of the same municipality; young population (%). Exogenous variables: living population; number of unemployed; money raised; men; and aging population.*

*Note: Standard deviations between parentheses.*

*Significance level: 1%\*\*\*; 5%\*\*; 10%\*.*

These results demonstrate that in the Main Soccer League of the AFB, the presence of other neighbouring soccer clubs (those whose head offices are located in the same municipality) benefits the sports performance of a given municipality[6]. We interpret this fact in two complementary ways. First, the presence of other neighbouring clubs improves competitiveness, which increases the quality of exhibitions. For instance, it increases the number of local derbies. Second, we can interpret the presence of other neighbouring clubs as proof of more accentuated associative practices in the municipality, which authors like Price and Sen (2003) or Breuer (2009) recognize as being very important to the sustainability of local nonprofit organizations.

---

[6] As already noticed, even when using different measures of competitiveness, this conclusion holds (the statistical significance of the coefficient estimated for the variable related to the number of non-profit soccer teams of the same municipality). Full results are avaiable under request.

FINANCIAL THEORY AND PRACTICE 36 (2) 199-220 (2012)

PAULO REIS MOURÃO, CÉSAR COSTA CIMA: WHAT MAKES NON-PROFIT SOCCER TEAMS RUN? A PANEL DATA APPROACH USING A SAMPLE OF BRAGA TEAMS

The statistical significance of youth deserves further emphasis. We have observed that the variable embodying the young population is statistically significant when explaining the number of teams in a given municipality (tables 5 and 6). These results confirm that the younger segment of a population exerts a special influence on the development of local non-profit organizations; it increases the demand for sports events and the potential supply of members working for these organizations (Prouteau and Wolf, 2002).

Therefore, our results strengthen those of Price and Sen (2003) and Prouteau and Wolf (2002) who showed that non-profit organizations depend greatly on local institutions, the support of close local markets and the backing of specific groups. In our case, we observed that the sports performance of non-profit clubs depends on the presence of a larger number of local associations, as represented by the number of other clubs playing in the main amateur soccer league in the Braga District. In turn, the number of non-profit soccer teams depends on the influence of young people (considered a proxy for the specific market for these non-profit clubs), a higher value of money raised in local banks (considered a proxy for income per capita) and higher values of unemployed people (considered a proxy for more industrialized areas).

Regarding the practical implications of our results, we argue that to increase the sustainability and competitiveness of non-profit soccer clubs, their goals should focus on garnering greater local support. In addition, institutions that support associative practices and non-profit organizations should be promoted.

Our results also suggest avenues for future research. First, we will extend our sample to include all amateur soccer leagues in Portugal. Second, we want to analyze the efficiency of each club, considering its own endogenous resources (and using DEA – data envelopment analyses – techniques). Finally, we want to deepen our analysis of the relationship between the sports performance of non-profit soccer clubs and the number of soccer clubs in each municipality, discussing whether the observed positive relationship is mainly due to competitive forces or institutional features. Finally, as soon as Portuguese databases allow it, we want to expand the set of covariates to include proxies for civic activity and social capital. A last set of developments will analyze the extent of economic stimulus generated by these non-profit soccer teams on local economies.

## 5 CONCLUSION

This paper examined the determinants of the sports performance of non-profit soccer clubs in the Braga District Soccer League between 2000 and 2009. The past literature highlights some differences between the determinants of the sporting performance of non-profit soccer teams (playing in amateur leagues) and the determinants of the sporting performance of the most competitive (and most expensive) soccer teams, which usually play in the most prominent professional

leagues. These determinants can be local forces, but they may also be institutional in nature.

Places characterized by dynamic local market forces, such as support from sustainable groups and active members, show a greater propensity to support well-developed non-profit organizations. The literature (Heitzmann, 2000; Mourão and Colonna, 2011) has also showed that institutional dynamics, such as an environment characterized by a larger number of non-profit organizations in general, can be as significant as local factors when explaining the activity and sustainability of non-profit soccer teams.

We constructed an empirical model for evaluating these factors. Using fixed effects estimation (and 3SLS for a more robust system of simultaneous equations), we obtained relevant and pioneering results related to Portuguese non-profit soccer clubs. We concluded that non-profit soccer clubs in municipalities with many such clubs exhibited better sports performance. We have also observed that some factors increase the number of amateur soccer clubs in each municipality. We found that increasing the values of young population and of local income may promote a larger number of amateur soccer clubs. Finally, we also concluded that industrialized areas tend to offer better structures for the generations and sustainability of these amateur clubs.

These results also confirmed that local market forces related to demographic composition and the presence of an active non-profit associative environment increase the sports performance of non-profit teams.

These conclusions have relevant consequences. They show that an effective set of local institutions is necessary for promoting a sustainable environment for the development of non-profit organizations. Our results also demonstrate that non-profit organizations should focus on primary (local) markets and their composition. Finally, these results are pioneering within Portuguese studies in the fields of sports economics and the economics of non-profit institutions and open an interesting line of research with a large potential for development.

FINANCIAL THEORY AND PRACTICE 36 (2) 199-220 (2012)

PAULO REIS MOURÃO, CÉSAR COSTA CIMA: WHAT MAKES NON-PROFIT SOCCER TEAMS RUN? A PANEL DATA APPROACH USING A SAMPLE OF BRAGA TEAMS

FINANCIAL THEORY AND PRACTICE
36 (2) 199-220 (2012)

PAULO REIS MOURÃO, CÉSAR COSTA CIMA: WHAT MAKES NON-PROFIT SOCCER TEAMS RUN? A PANEL DATA APPROACH USING A SAMPLE OF BRAGA TEAMS

**APPENDIX**

**DETAILING BRAGA SOCCER LEAGUE**

The Braga Soccer League is organized annually by the Braga Soccer Association. This (amateur) competition is a competition located between the lower (secondary) amateur league, only played by Braga teams, and the Portuguese 3rd Divisions (regional leagues, played by teams from different Soccer Associations). During the course of a season (usually from October to May), each club plays the others twice (a double round-robin system), once at its home stadium and once at each of its opponents'. Teams receive three points for a win and one point for a draw, and zero points are awarded for a loss.

Some changes have been made to the Braga Soccer League format since the 2000 season.

At the beginning of the 2000/01 and 2001/02 seasons, the league consisted of two groups, *Serie A* and *Serie B*. Each group had 16 teams. The teams played each other twice, once at home, once away. At the end of the championship, the teams that were ranked first place in each group played each other in two matches, one at home and the other away, to determine the awarding of the title. These two teams were promoted to the national championships (Portuguese 3rd Divisions), while the last four teams from each group were relegated to the lower (secondary) amateur league.

In 2002/03, the first of a series of changes occurred. At the end of the season, the last four teams in each group were relegated as usual, but now six teams were promoted to the main amateur league (Braga Soccer League), adding two teams to each group.

Hence, in 2003/04, each group was composed of 18 teams and, as had not been the case the previous year, the Braga champion was determined in only one game. The game was played at the home of the team, of either group, that had more aggregate points. In this year, two teams were promoted to the national championships, and six teams from each group were relegated to the secondary amateur league.

In 2004/05, the Braga Soccer League consisted, again, of 16 teams, but in this season, it wasn't played the game that identified the champion. Two teams were promoted to the national championships, and four teams from each group were relegated to the secondary amateur league.

In 2005/06, nothing changed, but the game that determined the champion was disputed again.

In 2006/07, the most significant change occurred. At the end of the season, two teams were promoted as usual, but 11 teams from each group were relegated to secondary status. Just four teams from each group were moved to a new format of the championship round, with 16 teams. In this season, six teams from the lower division were promoted to the Braga Soccer League, and two teams (from the Braga Soccer Association) that played in the national championships were relegated to the Braga Soccer League.

From that season until the 2009/10 season, four teams were relegated to the lower amateur division, and two teams were promoted to the national championships.

More details can be found on the webpage of the Braga Soccer Association: http://www.afbraga.com/portal/page/portal/PORTAL_FUTEBOL/BRAGA/BRAGA_ASSOCIACAO.

FINANCIAL THEORY AND PRACTICE
36 (2) 199-220 (2012)

PAULO REIS MOURÃO, CÉSAR COSTA CIMA:
WHAT MAKES NON-PROFIT SOCCER TEAMS RUN? A PANEL DATA APPROACH USING A SAMPLE OF BRAGA TEAMS

## LITERATURE

**Ahlfeldt, G. and Feddersen A., 2009.** "Geography of a sports metropolis". *IASE Conference Papers,* No. 0802.

**Allmers, S. and Maennig W., 2008.** "South Africa 2010 economic scope and limits". *Hamburg Comtemporary Economic Discussions Working Papers,* No. 021.

**Araújo, J., 2003.** "A governação local e os novos desafios". *Fórum de Gestão e Administração Pública,* 2003, Mirandela.

**Besson, E., 2008.** "Accroitre la competitivité des clubs de football professionnel français" [online]. Mimeo. Available from: [http://www.ladocumentationfran-caise.fr/rapports-publics/084000693/index.html].

**Bogson, P., 2000**. *Public Policy and Local Governance*. Cheltenham: Edward Elgar.

**Bourdieu, P., 1991**. *Language and Symbolic Power*. Cambridge: Harvard University. Press.

**Bourdieu, P., 1977**. *Outline of a Theory of Practice.* Cambridge: Cambridge University Press.

**Breuer, M., 2009.** "The demand for football tickets depending on the number of clubs in a city – Empirical evidence from Germany ". *International Network for Economic Research Working Papers,* No. 2009.5.

**Chaves, R. and Monzon, J., 2001**. "Economía social y sector no lucrativo: actualidad científica y perspectivas". *CIRIEC-España, Revista de Economía Pública, Social y Cooperativa*, (37), 7-33.

**Christaller, W., 1933.** Central Places in Southern Germany. Baskin C. W., Trans. Fischer, Jena.

**Cunha, L., 1997.** "Espaço e o Desporto – Estudo de Acessibilidade ao Desporto na Sub-Região do Vale do Tejo – Constituição de um Modelo de Analise". Dissertação de Doutoramento, Faculdade de Motricidade Humana.

**Downward, P. and Dawson, A., 1999.** "The demand for professional team sports: traditional findings and new developments". Staffordshire University; *Business School Working Paper* 997.

**Durand, J. Y., 2005.** "Haverá coisas eternas? Vila Verde, os Lenços de Namorados, a tradição e a inovação". *Boletim Cultural de Vila Verde.*

**Fort, R. and James, Q., 1997.** "Introducing a Competitive Economic Environment into Professional Sports" in: W. Hendricks ed. *Advances in the Economics of Sports.* Greenwich, CT: JAI Press.

**Gartner, M. and Pommerehene, W., 1978.** "Der Fussballzuschauer – ein Homo Oeconomicus?". *Jahrbuch fur Sozial Wissenschaft*, 29, 88-107.

**Halabi, A. and Frost, L., 2007.** "Measuring the Success of Country Football Clubs". *Monash Economics Working Papers,* 16/07.

**Halicioglu, F., 2006.** "The impacts of football point systems on the competitive balance: evidence from some European football leagues". *Rivista di Diritto ed Economia dello Sport,* 2, 67-76.

**Heitzmann, K., 2000**. "The role of third sector organizations in specific policy fields: Contrasting nonprofit theory and empirical findings – The case of Austria". Paper prepared for the fourth international conference of the international society for the third-sector research: Evaluating the impact of the third sector; Dublin, July 2000.

**Hoffman, R. [et al.], 2003.** "Comparing the Socio-Economic Determinants of Men's and Women's International Soccer Performance"; *Centre for Europe-Asia Business Research*; CEABUR Working Paper 1/2003.

**Horowitz, I., 1997.** "The Increasing Competitive Balance in Major League Baseball". *Review of Industrial Organization*, 12, 373-387. doi: 10.1023/A:1007799730191

**Humphreys, B. and Coates, D., 2008.** "Do Economists Reach a Conclusion on Subsidies for Sports Franchises, Stadiums, and Mega-Events?". *International Association of Sports Economists Working Papers,* 0818.

**Hurtado, M., Sanz, A. and Cantuche, J., 2007.** "Evaluaci´on del impacto economico y social de la celebracion de grandes eventos deportivos a nivel local: el caso del Campeonato de Tenis femenino de la ITF en Sevilla en 2006". *Revista de Metodos Cuantitativos para la Economia y la Empresa,* 3, 20-39.

**Johnson, B., Groothuis, P. and Whitehead, J., 2001.** "The value of public goods generated by a major league sports team: the CVM approach". *Journal of Sports Economics*, 2 (1), 6-21. doi: 10.1177/152700250100200102

**Kriemadis, T. and Theakou E., 2007.** "Strategic Planning Models in Public and NonProfit Sports Organizations". *Sport Management International Journal*, 3 (2), 27-37.

**Leonard, J. M., 2005**. "The geography of visitor attendance at college football games". *Journal of Sports Behavior*, 28 (3), 231-252.

**Mourão, P. and Colonna, J., 2011.** "Factores de localización de las cofradias religiosas en actividad: una investigacion a orillas del Atlantico y del Pacifico". *Scripta Nova – revista de Geografia y Ciencias Sociales*. Available from: [http://www.ub.edu/geocrit/sn/sn-367.htm].

**Mourão, P., 2005.** "A importância do desenvolvimento regional na localização de equipas de futebol profissionais. O caso português 1970-1999.". *Revista Portuguesa de Estudos Regionai*s, 8, 31-45.

**Mourão, P., 2010.** "Regional determinants of competitiveness: the case of European soccer teams". *International Journal of Sport Finance,* 5 (3), 222-234.

**Noll, R. and Zimbalist, A. (eds.), 1997b.** *Sports, Jobs and Taxes: The Economic Impact of Sports Teams and Stadiums*. Washington, DC: The Brookings Institution Press.

**Oldenboom, E., Gratton, C. and Solberg, H., 2002.** *The economic impact of hosting UEFA EURO 2008 for the Nordic countries*. Copenhagen, Nordic Council of Ministers.

**Oliveira, G. and Lima, J., 2003.** "Elementos endógenos do desenvolvimento regional: considerações sobre o papel da sociedade local no processo de desenvolvimento sustentável". *Revista FAE,* 2, 29-37.

**Osmanagic, J. and Pejanović, M., 2006.** "Institution for Local and Regional Development in Bosnia and Herzegovina". *ERSA conference papers,* 67.

**Padin, C., 2004.** "*El desarrollo endógeno local. Estudio de la actividad turística como forma de aprovechamiento de los recursos: aplicatión al caso del Baixo Miño".* Departamento de Economia Aplicada, Universidade de Vigo, Tese de doutoramento não publicada.

**Price, D. and Kabir, S., 2003.** "The Demand for Game Day Attendance in College Football: An Analysis of the 1997 Division 1-A Season". *Managerial and Decision Economics,* 24 (1), 35-46. doi: 10.1002/mde.1100

**Prouteau, L. and Wolff, F., 2002.** "La participation associative au regard des temps sociaux". *Économie et statistique,* (352-353), 57-80. doi: 10.3406/estat.2002.7393

**Ribeiro, J. and Santos, J., 2005.** "No trilho de uma política regional".Universidade do Minho, NIPE, Working Papers, 15.

**Schemel, J., 1999.** "Urbanismo y Ambiente". *iAkS*, No. 16.

**Schmidt, M. B. and Berri, J.D., 2001**. "Competitive Balance and Attendance: The Case of Major League Baseball". *Journal of Sports Economics*, 2, 145-167. doi: 10.1177/152700250100200204

**Silva, N., 2006.** "A cooperação das câmaras municipais nas associações de municípios: o caso do distrito de Braga". Dissertação de Mestrado Universidade do Minho.

**Szymanski, S. and Kesenne, S., 2004**. "Competitive balance and gate revenue sharing in team sports". *Journal of Industrial Economy*, 53 (1), 165-177. doi: 10.1111/j.0022-1821.2004.00220.x

**Vasquez, B. and António, C., 1995.** "Innovacion y Cualificacion de los Recursos Humanos en el Desarollo Local". *XXI Reunión de Estudios Regionales*, Associação Espanhola de Ciência Regional, Vigo, 15-17 November.

**Vaza, M., 2010**. "Portugal ainda é quase só um País de futebol". *Jornal O Público* 29/12/2010.

**Viseu, J. [et al.], 2002.** "Planeamento e desenvolvimento desportivo municipal: Linhas de orientação para o planeamento de espaços desportivos".*Universidade do Minho: Núcleo de Investigação em políticas económicas.*

**Viseu, J., 2001.** "Desporto: Um Estado fora de jogo". *Revista Economia Pura,* 33, 44-47.

**Wooldridge, J., 2002.** *Econometric Analysis of Cross Section and Panel Data.* Cambridge, MA: MIT Press.

**ZeroZero, 2011**. Associação de Futebol de Braga, 2003. [online ]. Lisboa: ZeroZero. Available from [http://www.zerozero.pt/].