Demographic and Economic Factors Study in the Regional Sports Development

Mário Teixeira

Tiago Ribeiro
Departmentof Sport andHeath, Universityof Évora, Portugal
Colégio Luís António Verney
Rua Romão Ramalho, 59, 7000-671 Évora

Abel Correia
Faculty of Human Kinetics, University of Lisbon, Portugal
Estrada da Costa
1499-002 Cruz Quebrada – Dafundo

Abstract

This research aims to understand the effects of public policies on sport for people, through the study of factors influencing the process of regional sport development in Portugal. The chosen framework presented here relates to several variables such as the demographic dimension and economic aspects, focusing on the number of athletes. This applied methodology studies the development of sports for 2000-2009, using spatial econometrics to explain the variables in the database. The results obtained indicate an increasing number of athletes who were favoured by population density, land area, deaths and crime rate and disadvantaged by the infant mortality rate (demographic aspects). The dynamics of the economy (income inequality and income) were not able to present statistical evidence to enable them to explain the increase in the number of athletes. We conclude that the growth policies for sports should include 1: fostering an active demography (high density and population growth), 2: prioritize deprived areas (greater public insecurity). We also should consider the socio-economic context of the region, how to enhance the human capital of directors and how to insure a sustainable economic model for athletes.

Key Words: Sport development; regional development; public policy; local government; governance; sport management.

1. Introduction

The quality of life and well-being of the people is the most basic purpose of sport development policies. The range of services promoted by various institutions must be people oriented. The social, economic and sport reality presents a complexity that recommends a broad, but focused vision.

The amplitude of the sports Portuguese system should suggest a complementarity of the various operators. The practice of physical and sport activities is encouraged through various sub sectors and in different institutional environments, offered by many sports organizations, addressed to all people.

Although there is a multiplicity of interventions in the national sports system, we studied the regional development component of the sport, in order to better understand how the sport can reach more people.

This study aims to understand the factors that influence the process of regional sports development, listing eight variables relating to the demographic and economic size. In this study, the level of sport development is measured according to the number of athletes.

All variables were analyzed according to territorial criteria, with the eighteen districts (defined by the five planning regions of continental Portugal) and the two autonomous regions (Azores and Madeira), taken into consideration. There was a geographical distribution of 308 municipalities.

Considering the scientific approach in developing sports regional and in accordance with the scarce literature, it is unclear which factors influence sports development in the territory and the consequential impact on the number of athletes. In this context, there are probably critical points and some variables that's not explain intuitively the influence on the level of participation.

2. Background

The development of sport should occupy a central position in sport public policies. Most recent academic work concerning the treatment of sports development policies places great importance in the analysis of sports policies regional, national, european or monitoring certain global trends. In these studies (Bergsgard, Houlihan, Mangset, Nodland, & Rommetvedt, 2007; Bergsgard & Rommetvedt, 2006; Enjolras & Waldahl, 2007; Henry, 2001; Houlihan, 2005; Houlihan, 1997; Poupaux & Andreff, 2007), sports policies are viewed in a close relationship with a particular political ideology, based on a complex system of alliances and political arrangements.

Although there is a multiplicity of international conceptualizations a better analysis of regional and local sports policies in Portugal is required, considering such policies in this country seem to be less strategic, less institutional, less ideological but pragmatic, more reactive and more ad- hoc. Therefore, in order to understand specifically the phenomenon under study, it is essential to use tools that are more oriented to policies "implementation process" in complement with "agenda setting" policies.

This approach may help to deconstruct the strategic perspective of local authorities sports policy that it's being in support of positions of power (Nichols, Gratton, Shibli & Taylor, 1998) and to understand the role of patronage relationships between sports and politics sectors (Nassis& Henry, 1999; Stokes, 2007).

Houlihan & White (2002) highlight the role of local authorities in the UK, as key partners. The same authors observed that, in addition to contributing to the development of the sports system, local authorities realized and began using sport as an important tool to achieve the overall objectives of welfare policy. Thus, sport policies of local authorities may be understood as an essential means to promote social inclusion and coordinate the efforts of other partners.

According Numerato (2009), in a paper published in the Czech Republic, he put in evidence that the process associated with the sport, also at the local level decision, mainly pursues personal goals and policy makers of the future, to the detriment of the development of sport regional or well- being of communities.

In contrast to the latter example, several cities in more developed countries in Europe use sport as a means of economic revitalization, as revealed by a study from the University of Sheffield , this being a model city. According to Davies (2002) reveal that the externalities of sport in the regional economy, referring only the most obvious data is visible in lower rates of unemployment, health costs, crime and vandalism.

Also the London study authors Houlihan, Bloyce, & Smith (2009) corroborates this perspective when he concludes on the agenda of sports regional policies, referring to the sport as a tool for low cost to minimize the various social problems. The goals to regional economic regeneration intervention sport, social control (whereas in sporting activities can avoid engaging in other types of deviant activities), the development of social capital and also the most varied diplomatic goals (Houlihan, Bloyce, & Smith, 2009).

In support, a study in Taiwan shows that the sport has been a means to promote health, diplomacy and modernization. It advocated a strong link between sports figures and key regional political forces to increase the sporting level. To Tan & Cheng (2011) the success of elite sport promoted the increase in sporting activity in the region and simultaneously enhanced the public image of regional sports policies, both nationally and internationally.

Local authorities, particularly local councils, play an essential role in social and sporting development. The position of closeness to citizens, enclosing a deep understanding of their wants and needs, stopping power and the possible means to meet them.Thus, interest to highlight that the overwhelming majority of studies on this topic have been focusing on the municipal level and not at the regional level.

These studies give special attention to the potential and usefulness of norms that regulate the sport and reinforce the role of municipalities. To that extent municipality constitute themselves as privileged centers of global social development.

3. Methods

This article analyzes the regional sport development in Portugal, a regression model of spatial econometrics is using, which considers the spatial correlation of the explanatory variables in the estimation of the sport development. In this study we used various spatial econometric models and a database by district, in panel data, 2000-2009.

First we considered the spatial arrangement of each district in the sample, for each spatial location - location (Anselin, 1992). Consequently, we tested empirically the presence of global spatial autocorrelation, using the test of Moran's I (Moran, 1948).

$$I = \frac{n\sum_i \sum_{j \neq i} w_{ij}(y_i - \bar{Y})(y_j - \bar{Y})}{\sum_i \sum_{j \neq i} w_{ij}(y_i - \bar{Y})^2} \quad (1)$$

Then the classic OLS (ordinary least squares) regression model is disregard any heterogeneity and spatial autocorrelations, this is assuming independence between the explanatory variables of the form:

$$y = X\beta + \varepsilon \quad (2)$$

Then, in the context in spatial econometrics, among the wide range of possible modeling, we used the three most important spatial models (Anselin, 1988; Anselin, 1992; Bernat, 1996; Pisati, 2001). The SAR model (spatial lag autocorrelation model) allows the presence of autocorrelation between variables by relaxing the assumption of independence between them, with the introduction of the array of locations (W), using the following functional form:

$$y = \rho W + X\beta + \varepsilon \quad (3)$$

Then we used the model SEM (spatial error model), where the occurrence of autocorrelation between the error terms are taken into account, weakening thereby the hypothesis of absence of (auto) correlation between the random disturbance terms of , using, once again, the spatial matrix (W):

$$y = X\beta + \mu \quad (4)$$
$$\mu = \lambda W + \varphi$$

Finally, we used a mixture of the latter two models shown, which simultaneously considers the possibility that the resulting spatial factors, taken together, both autocorrelation between variables, such as from random errors - the template (SAC spatial autocorrelation lag and spatial error model).

$$y = \rho W + X\beta + \mu \quad (5)$$
$$Y_{it} = \rho W_{it} + X_{it}\beta + \mu_{it}$$

Where, y is the vector of observations of the dependent variable, X is the matrix of explanatory variables, β refers to the vector of coefficients of the model, ε sets the vector of random disturbances, W characterizes the array of weights - the spatial matrix, ρ describes the spatial correlation coefficient with respect to y, λ expresses the spatial correlation coefficient with respect to ε, μ exposes the vector of random errors (autocorrelated), φ is the vector of random noise, i represents the district, t represents the year.

4. Results

The results are based on research according to econometric models properly advertised.

Regarding Moran's I test aims to investigate empirically about the presence of spatial autocorrelation of variables, as shown in Table 1 (in attachments), reproduced below, attested the presence of spatial autocorrelation, not only in the dependent variable, as also in most of the regressors.

Regarding the results of the models estimation outlined above, and here represented, we should mention that although lead us to conclusions not too dissimilar, the SAC model was the one best suited to the available data, it has the lowest loglikelihood. The results are shown below in Table 2 (in attachments).

More specifically, the SEM was less coefficients were statistically significant. In a way, such an occurrence corroborates the idea that the SAC was one that showed lower quality of fit to the data. However, both the lambda as the Rho the SAC is statistically very significant, the same phenomenon is happening, respectively, on the parameters of the SEM (lambda) and SAR (rho), when considered individually.

Strictly speaking, we found unanimity as to the relevance of spatial models against the alternative OLS in all test statistics. Thus, both the Wald test, and the test of the ratio of the likelihood functions, statistical comprehensibility points to the significance, it's too strong, the spatial models. Again, this circumstance contributes to the econometric relevance employed in this article.

This time, we believe it is important to note that, according to our estimates, the major determinants of the number of sports groups across national districts are capital expenditure and expenditure on culture and sports. If the first to find a decrease in the number of athletes, the latter contribute to the opposite. It should be noted that current expenditures (which run out from one year to another) don't influence the number of athletes (endogenous variable).

The social and demographic point of view, import mention that the crime rate and the death rate showed a strong positive causal relationship with the number of athletes, unlike the infant mortality rate.

If public policies for sport, especially municipal, seek to increase the number of athletes by encouraging sporting population , then municipalities should drive up for this purpose and avoid ineffective policies, including policies to "spend money upon the problems", which were very common in Portugal in the period . Partly due to the abundance of available EU funds, especially for the construction of sporting and recreational training base. But not all of these investments yielded an increase in the number of athletes.

To conclude, it is considered relevant to mention that, purposefully, not by scientific candor, if adopted here, a linear modeling of the variables, a *lin - lin* relationship. In principle, one could have used the *logarithmized* dependent variable would cause a percentage interpretation of partial coefficients and smaller effects. However, such an option, by the way we also tested led to a lower overall quality of the fit of the model. This occurrence may be explained by the fact that, since *logarithmized* the dependent variable, the amplitude of the range of variability of the values assumed very small - less than two. Such reasoning can also be generalized in relation to the explanatory variables. Ultimately, we can't forget that a smaller range of variability of the values taken by the explanatory variables leads to imprecise coefficients.

5. Conclusions

This study provides conclusions about the dimensions and variables that favorably influence the increasing number of athletes. Analyzing the results, we conclude that the increased number of athletes is positively influenced by certainconditions, including: 1) an increase in population density, 2) a higher dimension of territorial area, 3) a high death rate; 4) a high crime rate.

The results obtained as well as the social value of sport are quite encouraging. The number of athletes participating increases in areas with higher crime rates. However, the results seem to suggest that the basic club sport is associated with suburban territories and populations a disadvantaged socioeconomic level. In these territory areas many young people have temporal availability conditions and lower pay for undertake costly activities of leisure time. In these terms, sport is an important solution with many advantages. This interesting result recommends further studies on the strategic importance of implementing programs promoting sport and talent identification in these local contexts, taking into account the national interest and the future of the Portuguese sport.

Interestingly, it is also important to note that none of the variables related to the dynamics of the economy (income and income inequality), were able to present statistical evidence that enabled an explanation the increase of in the number of athletes. The fact that yield and income inequality do not contribute to the increase in the number of athletes could mean that the supply of informal sport activities still exists. Activities that are provided free or do a cost within the reach of most citizens avoid the exclusion of households with lower monthly incomes.
So, we conclude that public policies that wish to enhance formal sports are more likely to succeed when they encourage an active demographic (high population density and population growth), undermine the disadvantaged and suburban areas, enhance the allocation of financial resources. Although there is a multiplicity of interventions in the national sports system, this study analyzed the component of regional development in sport in order to better understand how sport can reach more people. This distinguished into two truly innovative parameters, with special significance. On the one hand, we found a lack of studies on the treatment of municipal levels above relating to the Portuguese and European sports reality. Moreover, research is absolutely innovative to analyze the regional sports development through spatial econometric models.

6. References

Anselin, L. (1992). Spatial Data Analysis with GIS: An Introduction to Application in the Social Sciences. National Center for Geographic Information and Analysis. Santa Barbara: University of California.

Barros, C. (2006). Local Government and Regional Development in Sports. In W. Andreff& S. Szymanski (Eds.), Handook of Sport Economics (pp. 287-298). Cheltenham: Edward Elgar.

Barros, C. (2007). Analysing the relationship between sports and tourism: a case study for the Island of Madeira.International Journal of sport Management and marketing, 2(5/6), 447-458.

Bergsgard, A., &Rommetvedt, H. (2006). Sport and politics: the case of Norway. International review for the sociology of sport, 41(1), 7-27.

Bergsgard, A., Houlihan, B., Mangset, P., Nodland, I., &Rommetvedt, H. (2007). Sport policy: a comparative analysis of stability and change. Amsterdam: Butterworth-Heinemann.

Davies, L. (2002). Sport in the city: Measuring economic significance at the local level. European Sport Management Quarterly, 2(2), 83-112.

Enjolras, B., &Waldahl, H. (2007). Policy-making in sport: the Norwegian case. International review for the sociology of sport, 42(2), 201-216.

Henry, I.P., &Paramio-Salcines, J.L. (1999).Sport and the analysis of symbolic regimes - A case study of the city of Sheffield.[Article]. Urban Affairs Review, 34(5), 641-666.

Henry, P. (2001). The politics of leisure policy (2nd ed.). New York: Palgrave, Basingstoke.

Houlihan, B. (1997). Sport, national identity and public policy.Nations and nationalism, 3(1), 113-137.

Houlihan, B., & White, A. (2002).The politics of sport development. London: Routledge.

Houlihan, B. (2005). Public sector sport policy.International review for the sociology of sport, 40(2), 163-185.

Houlihan, B., Bloyce, D., & Smith, A. (2009).Developing the research agenda in sport policy. International Journal of Sport Policy, 1, 1-12.

McMillen, D.P. (2010). Issues In Spatial Data Analysis. Journal of Regional Science, 50(1), 119-141.

Moran, P. (1948).The interpretation of statistical maps.Journal of the Royal Statistical Society, Series B(10), 243–251.

Nichols, G., Gratton, C., Shibli, S. & Taylor, P. (1998).Local Authority support to volunteers in sports clubs.Managing leisure, 3, 119-127.

Numerato, D. (2009). The institutionalisation of regional public sport policy in the Czech Republic. International Journal of Sport Policy, 1(1), 13-30.

Ord, J.K. (1975). Estimation methods for models of spatial interaction.Journal of the American Statistical Association, 70, 120–126.

Poupaux, S., &Andreff, W. (2007).The institutional dimension of the sport economy in transition countries. In M.M. Parent & T. Slack (Eds.), International perspectives on the management of sport (pp. 99-124). Amsterdam: Elsevier.

Rütten, A. (1993). Policy analysis and utilization process: the interplay between sport policy and applied sociology of sport. International review for the sociology of sport, 28(4), 331-351.

Stokes, S. (2007).Political clientelism. In C. Boix& S. Stokes (Eds.)., The Oxford handbook of comparative politics (pp. 604-627). Oxford: Oxford University Press.

Tan, T-C., & Cheng, C-F.(2011). Sports development and Youth People in Taiwan. In B. Houlihan& M. Green (eds.), Routledge Handbook of Sports Development (pp. 184-197). New York: Taylor & Francis.

Wedel, R., Shore, C., Feldman, G., & Lathrop, S. (2005). Toward an anthropology of public policy.The annals of the American Academy of Political and Social Science 600(1), 30-51.

Appendices

Table 1: Statistics of Moran's I.

Nobs	Variables	I	Z statistic	p value
	Constant	**-0.032**	**-4.706**	**0.000**
	Demographic			
1	Dens	0,001	1,115	0,132
2	Area	-0.011	-1.120	0,131
3	Nat	**0,063**	**11,798**	**0.000**
4	Obit	**0,114**	**20,711**	**0.000**
5	Crime	**0,037**	**7,397**	**0.000**
6	MortInf	-0.007	-0.270	0.393
	Economicdynamics			
7	Rend	**0,091**	**16,848**	**0.000**
8	Desig	**0,042**	**8,172**	**0.000**

Note: boldface, the coefficients statistically different from zero.

Table 2: Results of the Estimation of Econometric Models

Nobs	Variable	OLS	SEM	SAR	SAC
	Constant	-8998.644	**-30,346.320**	**37757.260**	3496.734
		(-0.80)	**(-2.57)**	**(2.59)**	(0.23)
	Demographic				
1	Dens	**49.494**	**40.923**	**52.690**	**55.328**
		(8.65)	**7.41**	**(10.21)**	**(8.30)**
2	Area	**0,007**	0,003	**0,005**	**0,007**
		(2.73)	(1.08)	**(2.24)**	**(3.01)**
3	Nat	548.637	**1148.568**	451.741	150.535
		(0.84)	**(1.81)**	(0.77)	(0.23)
4	Obit	**1330.747**	**1847.187**	507.889	**829.569**
		(3.79)	**(5.07)**	(1.40)	**(1.80)**
5	Crime	184.417	142.218	128.799	**212.209**
		(1.62)	(1.33)	(1.25)	**(1.91)**
6	MortInf	**-272.291**	**-238.851**	**-310.774**	**-277.792**
		(-4.50)	**(-4.33)**	**(-5.68)**	**(-4.69)**
	Economicdynamics				
7	Rend	-13.530	-4.440	**-17.803**	-14.904
		(-1.33)	(-0.48)	**(-1.95)**	(-1.50)
8	Desig	-384.517	-459.469	303.842	222.999
		(-1.12)	(-1.30)	(0.88)	(0.48)

Note: z statistics in parentheses. The bold have statistically different coefficients from zero to a nominal significance level of 5%.