THE INCREASING IMPACT OF SPORT IN SPANISH ECONOMY

Antonio Chacón[1], Francisco Blanco[2], Javier Otamendi[2]
[1] Banco de España
Cash and Issue Department
Calle Alcalá 48, 28014 Madrid, Spain
[2]Universidad Rey Juan Carlos, Campus Vicálvaro
Facultad de Ciencias Jurídicas y Sociales
Departamento Economía Aplicada I
Paseo Artilleros s/n
28032 Madrid, Spain
E-mail: franciscojavier.otamendi@urjc.es

KEYWORDS

GDP, Regression Analysis, Sports, Timeseries

ABSTRACT

Sport is today an increasingly widespread phenomenon and the interest in its study has outstandingly increased in the last decades, especially in the field of Economics due to the emergence of the Economy of Sport. Nonetheless, both the complexity of sport as a concept and the lack of statistical data about it make sport an element of analysis with many aspects still to be researched. This paper aims at setting up a model which will allow forecasting the evolution of sport in the future. Thus, we have obtained the so-called "GDP of sport" for the period from 1995 to 2006 (period 1995-2006). This measure reflects the share of goods and services connected with sport in national GDP.

In this text, we bring forward a methodology to obtain this evolution of the GDP of sport and detail the sources consulted in order to obtain the necessary information, getting over the hurdle of the lack of statistical data already commented upon.

INTRODUCTION

Sport in modern society has begun to gain great importance in the individual's leisure time. In this sense, the interest to understand and enhance it from different perspectives has increased. In this sense, the economical impact of sport in society and the flows it yields has been studied in many researches of applied economics conducted mainly during the last two decades.

The relationship between Economics and sport has its origin later in time. Moreover, as sport is a very complex term -as we will see in the following pages, its analysis from an economical point of view has been very varied. Some authors have established a direct and structured relationship between sport and economics, as in the case of Heinemann (1998), Gratton and Taylor (2000) or Villalba (director) (2002). Some others have used economics as an analysis´ hoof to quantify the effects of different aspects of sports as it is the case of Riera (2005), González (2006), De la Dehesa y Ferrer (2000) or Martialay (1996).

In addition, the interest in obtaining a model of economical impact of sport in all its extend has gradually increased. Some others researches around it have already been developed as Pedrosa and Salvador (2003) show, when they collect the following summary of studies about it.

Table 1. Selected studies in the Economies of Sport

Quantifi-cation´s method	Goal	Example of an european study
Economic table	Discribing the value of the goods and services produced in a economy from an output, demand or income approach, thought a basic accountable identity	Jones (1989)
Satellite account	Application of the National Accounting technics to the information discribing the costs and benefits of a social topic which is little or no reflected in the GDP	Otero Moreno et. al (2000)
Input-Output Analysis	Diagnosis and forecast of the structural interdependencies of an economy, through the statiscial tables or representative matrices of every flow or goods and services. These are expressed in monetary value and are classified in detail in product´s groups or industries	Isla and Otero (2002)
Cost-Benefit Analisys	Identification and evaluation of the socio-economical impact of great public projects or political programs in order to adopt a rational decision, in line with the legal criteria (effectiveness of the assignature) and the principle of the opportunity cost	Kurscheidt (2000)
Sectorial analysis	Execution of monographic analysis of a club, a sport event or an economic problem related to sport (funding, fiscal management)	Andreff (1988)
Regional analysis	Achievement of the precise and detail data about the socioeconomical activities related to sport of maximum possible information about the components of the supply and demand of goods and services of sport and the socioeconomical activities, in order to visualize the economic cycle of sport in geographical area studied	Gouget (1999)

Source: self-made table using Pedrosa and Salvador (2003)

In Spain the research conducted by Aguirre, Lera and Rapún (2008) is to be highlighted. They analyze the economical weight of sport in the national account in the basis of self carried-out surveys. The aim in this article is to conduct a similar analysis in the basis of a quantitative methodology on those national accounts, in order to measure the economical impact of sport in them and establish a model for predicting the future. In the fifth part of the article, such prediction will be drawn upon the basis of the results obtained and showed in the fourth part. In the second part we detail what sport is and how can it be classified in order to expose in the third part the quantitative methods used, considering the existing methodology to quantify the macro-magnitudes in Spain. We use macro-magnitudes

because the result of the economical weight of sport obtained will be called "GDP of sport" as the GDP is the macro-magnitude used as reference indicator to measure a country's development level.

SPORTS AND NATIONAL ACCOUNTS

Parallel to the organizational hierarchy of sport, the difference between sport itself and the services provided for and by it needs to be clear. Hence, the sports field is made up for the group of economical agents who offer products and services created and derived from sport. This is what is commonly called "products (as goods) and services" of sport. Under these premises, facilities for practicing sports, sports clubs, federations and the rest of institutions that offer anything around sport (not only amateur but also high performance) are part of that sports field, as they consume and produce goods and services around the sport itself. Nonetheless, some other agents have to be included. For instance, energetic drinks that enhance performance in sports, clothes and footwear produced

and offered for sports, and so on. Therefore, the companies in charge of the production of these goods also must be included as economical agents in the sports field.

Then, our goal in this research is the estimation of the economical weight of the sports field in the GDP. For this reason, goods and services of sport are to be estimated in terms of added value in comparison to the total value of the goods and services produced in an economy. To produce this quantification we have to turn to the different quantificational methods that exist in an economy to quantify GDP. In this sense, the rules established by the European System Accounts (ESA)-95 are used as reference in Europe. They establish the rules to quantify the GDP from three different approaches: the demand approach, the output (or supply) approach and the income approach, as it appears on Table 2.

Table 2. GDP Quantification Methods

DEMAND	SUPPLY	INCOME
Final consumption expenditure	Agriculture and fishing	Compensation of employees
Household final consumption expenditure	Energy	Operation surplus, gross / Mixed income gross
Final consumption expenditure of NPISHs	Industry	
Final consumption expenditure by government	Construction	Net taxes on production and imports
Gross capital formation	Service activities	
Gross fixed capital formation	Market services	
Changes in inventories and acquisitions less disposals of valuables	Non-market services	
Exports of goods and services	SIFMI	
Imports of goods and services	Taxes less subsidies on products	
GROSS DOMESTIC PRODUCTS AT MARKET PRICES	GROSS DOMESTIC PRODUCT AT MARKET PRICES	GROSS DOMESTIC PRODUCTS AT MARKET PRICES

Table 3. Disaggregation of National Accounts

Level	Hierarchycal Name	Number	Identification	Example
First	Sections	17	1 alphabetic digit	**D.** *Manufacturing*
Intermediate	Sub-sections	16	2 alphabetic digits	**DA.** *Manufacture of foods products, beverages and tobacco products*
Second	Divisions	60	2 numerical digits	**15.** *Manufacture of foods products and beverages*
Third	Groups	222	3 numerical digits	**15.1.** *Meat and meat products*
Fourth	Classes	493	4 numerical digits	**15.11.** *Fresh and frozen meat (except birds)*
Fifth	Categories	946	5 numerical digits	**15.11.1.** *Meat of cattle, pigs, goats, horses and sheep*
Sixth	Sub-categoríes	23094	6 numerical digits	**15.11.11.** *Fresh or frozen meat of cattle*
Seventh	Elements	5330	8 numerical digits	**15.11.11.10.** *Fresh meat of cattle*

If we decided to quantify the GDP from the supply point of view, we would sum the added value of every product that compounds the given national economy and its different productive sectors. The ESA-95 disaggregates these productive sectors in two ways,

according to the added value of the activities performed in each sector, or according to the added value of its products. In both cases, the ESA-95 develops two breakdown tests, which are, in the first case, the National Classification of the Economical Activities

(NACE) and in the second case, the National Classification of Products by Activity (NCPA).

In our study, the disaggregation of the NCPA is the one taking in consideration. It will help identify the goods and services of an economy as it is presented in the next part.

METHODOLOGY TO QUANTIFY THE GDP OF SPORT

The identification of the goods and services of sport in the national accounts: data sources.

To identify the goods and services of sport that exist, the complete chart of the NCPA has to be evaluated. It is developed through numerical and alphabetical digits. The goods and services related to sport and which can be considered as products or services of sport appear among them. Such a classification, built through digits, follows the structure that appears in Table 3.

Most of the goods and services that are going to appear are to be found after the categories' level. That is an obstacle for the analysis, as the data offered by the INE (Instituto Nacional de Estadística, the public institution in charge of the creation and publication of the national accounts) exposes that it never exceeds the groups level. In order to solve this problem, we will turn to external data sources to obtain higher disaggregation or to obtain given data to estimate the one we are aiming for. The external data services used are:

- Input-Output tables (National Statistics Institute (INE))
- Industrial Products Survey (INE)
- Annual Trade Survey (INE)
- Industrial Companies Survey (INE)
- Annual Services Survey (INE)
- Cultural consumption expenditure of households (Ministry of culture)
- Media General Survey (Association for Media Research)
- Statistics of education (National Statistics Institute)
- Public expenditure on education (Ministry of Education)
- Education law (Official State Bulletin)
- Strategic marketing analysis of pay TV in Spain (ESIC-Market review)
- Evolution of book sold value according to size of companies (Ministry of Culture)
- Annual report of National association of soft drinks (National Association of soft drinks)
- Annual report of Spanish federation of food industry and beverage (Spanish federation of food industry and beverage)
- Annual reports of Spanish association of distributors and publishers of entertainment software (Spanish association of distributors and publishers of entertainment software)

- Data of Spanish association of toy manufactures (Spanish association of toy manufactures)
- Structure of the construction (Ministry Building)
- Government tenders under construction (Ministry Building)
- Annual report of Consultrans (Consultrans)
- Comparative analysis of the use of sport in televised publicity in Spain (Ph D. Author: Ágnes Riera)
- Society and sports: Analysis of sport in society and media in Spain. (Ph D. Author: Manuel González)
- Sporting habits survey (Higher Council for Sports)
- Annual Report of National Gaming Commission (National Gaming Commission)
- State budget (INE)
- Public suvenciones sports (Higher Council for Sports)
- National accounts of public administration (INE)

Obviously, the information offered by the given services is not expressed in terms of added value or in basic prices, which are the terms used to quantify GDP. Therefore, the information which offers a detail of the goods and services of sport after the group's level is to be found, but also the information that details the division used to establish a relationship between both of them. This is to be extrapolated to the added values that we already have in those divisions, and thus estimates the added value in basic prices of the goods and services of sport.

The quantification of the goods and services of sport in the national accounts: GDP of sport.

The compilation of the information achieved from the services mentioned above is an important part of the methodology itself, due to the absence of statistical information in the field of economics of sport, as Pedrosa and Salvador (2006) state. Therefore, once this difficulty is overcome, the next step is the exploration of the information obtained to quantify the accounts that are to be identified as economically affected by sport. The following list shows every group that is included either in that level or in a higher disaggregated level:

- 01. Agriculture, forestry and logging (01.5)
- 05. Fishing and aquaculture (05.0)
- 15. Manufacture of foods products and beverages (15.9)
- 17. Manufacture of textiles (non disaggregation)
- 18. Manufacture of wearing apparel (18.2)
- 19. Manufacture of leather and relates products (19.2 and 19.3)
- 20. Manufacture of wood and of products and cork (non disaggregation)
- 21. Manufacture of paper (non disaggregation)
- 22. Printing and reproduction of recorded media (22.1)
- 24. Manufacture of chemical (non disaggregation)

- 25. Manufacture of rubber and plastic products (non disaggregation)
- 29. Machinery and machineryand equipment (non disaggregation)
- 30. Manufacture of computers and peripheral equipment (non disaggregation)
- 32. Manufacture of electrical equipment (non disaggregation)
- 34. Manufacture of motor vehicles, trailers and semi-trailers (non disaggregation)
- 35. Manufacture of other transport equipment (35.1 and 35.4)
- 36. Manufacture of furniture and other manufacturing (36.2, 36.4 and 36.5)
- 45. Construction (45.2)
- 50. Wholesale and retail trade and repair of motor vehicles (non disaggregation)
- 51. Wholesale trade (51.1, 51.2, 51.3 and 51.4)
- 52. Retail trade (52.1, 52.2, 52.3, 52.4 and 52.7)
- 55. Accommodation (55.2)
- 60. Land transport and transport via pipelines (60.2)
- 62. Air transport (non disaggregation)
- 63. Warehousing and support activities for transportation; travel agency, tour operator reservation service and related activities (non disaggregation)
- 64. Postal and courier activities and telecommunications (64.1 and 64.2)
- 71. Rental and leasing activities (non disaggregation)
- 72. Computer service activities (non disaggregation)
- 74. Other professional, scientific and technical activities (non disaggregation)
- 75. Public administration (75.1)
- 80. Education (80.1, 80.2 and 80.3)
- 85. Veterinary and human health activities; social works activities (non disaggregation)
- 92. Cultural, recreational and sports activities (92.2, 92.3, 92.4, 92.6 and 92.7)

As it is very difficult to fill the data for every disaggregation that contains such divisions, we will estimate the added value of the products and services of sport over the total added value of the goods and services existing in the mentioned divisions. We have already said that the impact of sports in each account of the GAV components appears in different disaggregation level of the NCPA. This is that the products and services of sport that we identify in each sub-sector of the production will appear sometimes on the group level of the NCPA and some others will not appear until the category level of disaggregation or ever under the subcategories or elements level.

The goods and services of sport will be those produced by the producers of the sport's sector. In this case, the clothing of sport is manufactured by a textile company, but as such piece of clothing is related to sport, the company will be considered as producer in the sector of sport.

EVOLUTION OF THE GDP OF SPORT FROM 1995 TO 2006

Once we have identified the accounts of the Gross Added Value (GAV) for the economy that contains products and services of sport, these have been quantified thanks to the estimation done with the available information (years 1995 to 2006) in the variety of sources described. At this point, a relationship between the GDP of sport and the results obtained in terms of production, so many indirect effects produced by the sector of sport in other series de production will be excluded from the explanation even through they also offer such results. For this reason, the comparison between the GDP of sport will be done not only with the total GDP of the economy but also with the total GAV of that economy. This way, the comparison will be more empirical. Graphic number 1 depicts the evolution of GDP of sport, and also what could be called the GAV of sport under the same premises.
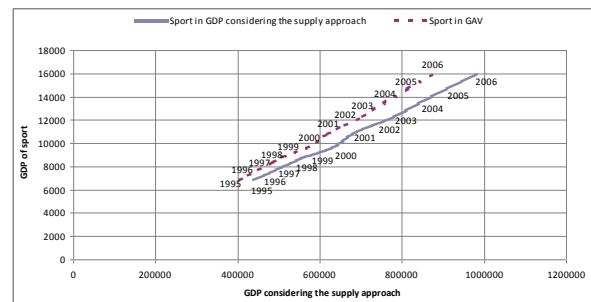

Figure 1. Evolution of GDP of Sports

It is easy to observe that the relationship between sport and the total GAV and the GDP follow an increase through the time-period analyzed. This increase is lower in 2000 but this fact is compensated with a higher increase in the following year. If we add the evolution of the percentage of the weight of sport in GDP (Figure 2) to this increasing relation, it can be concluded that the value of the goods and services of sport increase with the increment of the income (indicated by the GDP).

This fact stays in line with the idea exposed at the beginning, that sport increases with the development of the welfare state, as GDP is, as it has been pointed out the reference indicator in terms of economical growth. Therefore, the higher the GDP, the higher the levels of the Welfare State. A quadratic model shows the best fit in terms[1] adjusted r^2 (achieving a high 85%):

---

[1] We have tried all of the possible regression models in SPSS. In terms of r^2, the best is the cubic model; but it has one more term than the quadratic model, so the
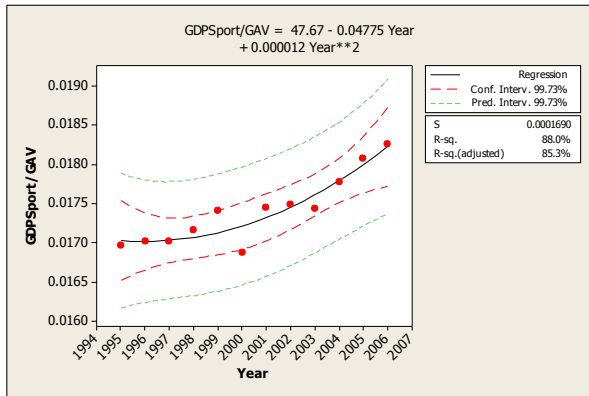
Figure 2. Evolution of the percentage of GDP of Sports in the GDP

Even in twelve years it is possible to distinguish four periods, explained by the evolution of the sport in the four main sectors – industry, service, construction – and the two levels of sports – professional or amateur -:

1) From 1995 to 1999: It is a stable period in almost every sector except for industry. Its decrease is compensated by a higher impact of profesional over amateur sports.
2) Year 2000: Industrial and professional weight decreases significantly, negatively affecting the influence of sport in the GDP.
3) Years 2001 and 2002: It is a recovery period for the construction and industrial sectors. There is a recovery of the professional sports, although the weight of amateur sports is still higher.
4) From 2003 to 2006: Services and professional sports are driving the impact of GDP of sports upwards.

This final trend, as well as the view of the graph over the whole period, gives the impression that the impact might continue to rise, even at a higher pace. To predict until 2025, we have used the best possible ARIMA model, ARIMA (0,1,0), with $r^2 = 0.598$ (figure 3). It looks like the importance of sports in the economy will rise in years to come.

PREDICTIONS

The information that can be obtained in Figures 1 to 3 is diverse: from the measure of the effect of sport in the evolution of the GDP to the evolution of sport as economic good - if we extrapolate the results to the quantification of the GDP from the incomes demand point of view-, the influence of sport in terms of salary and employment could be estimated. Moreover, an analysis of each part of sport in which it has been divided with the classification given at the beginning of this paper could also be carried out, describing what

adjusted r^2 is somewhat smaller in the cubic than in the quadratic one.

the GDP of amateur sport and the GDP of high performance sport would be.

Nonetheless, all these possible interpretations are out of the analysis, in which our main goal is a prediction over the possible evolution of GDP of sport as it seems reasonable. After what has been discussed in this paper, it is feasible to deduce that sport has a great importance in the national economy.
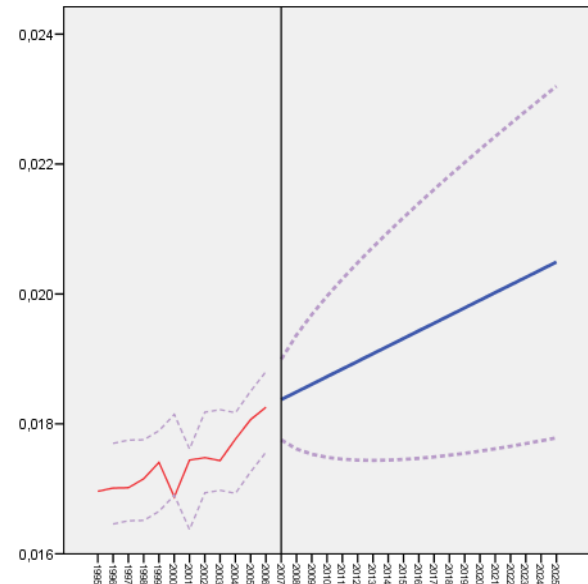

Figure 3. Prediction of the percentage of GDP of Sports in the GDP

REFERENCES

Aguirre, J.; Lera, F. And Rapún, M. (2008). Análisis Y Evaluación Económica De La Práctica Deportiva En España. Madrid: CSD.

Andreff, W. And Szymanski, S. (2006). Handbook On The Economics Of Sport. Cheltenham: Edward

Asociación Española De Distribuidores Y Editores De Software De Entretenimiento (2008). Informes Anuales De 2001 A 2007. Madrid.

Asociación Española De Fabricantes De Juguetes (2008). Informes Anuales De 2001 A 2007. Madrid.

Asociación Nacional De Bebidas Refrescantes (2010). Informes Anuales Del 2000 A 2009. Madrid.

Asociación Para La Investigación De Los Medios De Comunicación (2009). Estudio General De Medios. Informes Desde Abril De 2000 A Marzo De 2001 Hasta Abril De 2008 A Marzo De 2009 Madrid.

Boletín Oficial Del Estado (1990). Ley 10/1990 Del Deporte. Madrid.

(1995). Ley 9/1995 De Ordenación Del Sistema Educativo. Madrid.

Cámara De Comercio E Industria De Zaragoza. (2009). Impacto Económico Del Fútbol De Primera División En Zaragoza. Zaragoza: Cámara De Comercio E Industria De Zaragoza.

Cervera, A.; Cuadrado, M. And Mayo, C. (2002). "El Patrocinio En El Balonmano Femenino: La Experiencia De Un Equipo Líder". Revista Esic-Market, (113), 127-141.

Comisión Nacional Del Juego (2008). Memorias Anuales Del Juego De 1997 A 2007. Madrid.

Consejo Superior De Deportes (2007). Estadísticas Del Deporte. Series De 1998 A 2006 Madrid.

Consultrans, S.A. (1996). Informe Anual 1995. Madrid.

(2000). Informe Anual 1999. Madrid.

(2004). Informe Anual 2003. Madrid.

De La Dehesa, A. And Ferrer, J. (2000). Escenarios De Desarrollo Del Sector De Artículos Deportivos. Barcelona: Sport Panel

Downward, P.; Dawson, A. And Dejonghe, T (2009). Sports Economics. Theory, Evidence And Policy. Oxford (Great Britain): Elsevier

Espejo Saavedra, J.L. (2009). Elaboración De Un Modelo De Impacto Del Fútbol En La Economía Española. Madrid: Esic Editorial

Federación Española De Industrias De La Alimentación Y La Bebida (2009). Informes Anuales De 1998 A 2008. Madrid.

García, J. And Ventura, R. (2006). "Análisis Estratégico De La Comercialización De La Televisión De Pago En España". Revista Esic-Market, (124), 249-281.

García, M. (2005). Encuesta Sobre Hábitos Deportivos De Los Españoles. Madrid: Csd.

García, M. E.; López, M. A. And Ruiz, J. (2005). Importancia En La Sociedad De Un Gran Evento Deportivo. Juegos Mediterráneos Almería 2005. Almería: Gymnos.

González, M. E. (2006). Sociedad Y Deporte: Análisis Del Deporte En La Sociedad Y Su Reflejo En Los Medios De Comunicación En España. Tesis Doctoral. A Coruña: Universidad De A Coruña.

Gratton, C. And Taylor, P. (2000) Economics Of Sport And Recreation. London (Great Britain): Spon Press

Heinemann, K. (1998). Introducción A La Economía Del Deporte. Barcelona: Paidotribo.

Instituto Nacional De Estadística (1993). Clasificación Nacional De Actividades Económicas 1993. Madrid.

(2009). Clasificación Nacional De Actividades Económicas 2009. Madrid.

(2002). Clasificación Nacional De Productos Por Actividades 2002. Madrid.

(2008). Contabilidad Nacional De España. Cuentas De Las Aa. Pp. Series De 1997 A 2007. Madrid.

(2008). Contabilidad Nacional De España. Tablas Input-Output De 1995 A 2007. Madrid.

(2008). Encuesta Anual De Comercio. Serie De Datos De 2000 A 2007. Madrid.

(2008). Encuesta Anual De Servicios. Serie De Datos De 2000 A 2007. Madrid.

(2008). Encuesta Anual De Comercio. Serie De Datos De 2000 A 2007. Madrid.

(2008). Encuesta Industrial De Productos. Serie De Datos De 1993 A 2007. Madrid.

(2009). Estadísticas De Educación. Alumnado Matriculado. Serie 1990-2008. Madrid.

(2008). Presupuestos Generales Del Estado De 1995 A 2007. Madrid.

Iranzo, J.E.; Martínez, J.; Requeijo, J.; And Salido, M. (2002). Los Indicadores Económicos. Madrid: Editorial Ac

Martín-Velicia, F. A. And Villarejo-Ramos, A. F. (2007). "Una Propuesta De Modelo Para La Medición Del Valor De Marca En Entidades Deportivas". Revista Esic-Market, (123), 87-108.

Ministerio De Cultura (2008). Gasto En Consumo Cultural De Los Hogares. Serie De Datos. Madrid.

(2008). Informe De Edición De Libros Por Temática. Madrid.

Ministerio De Educación (2008). Gasto Público En Educación 1999. Serie De Datos De 1999 A 2007. Madrid.

Ministerio De Fomento (2002). Estructura De La Construcción. Serie De Datos De 2001 A 2008. Madrid.

(2008). Licitación Oficial En La Construcción. Serie De Datos De 1999 A 2007. Madrid.

Muñoz, A.; Parra, F. And Santos, J. (2001) Métodos De Construcción De Contabilidades Nacionales Y Tablas Input-Output En España.Técnicas De Análisis Input-Output. Madrid: Universidad Nacional De Educación A Distancia (Uned)

Otero, J.M. (Director) (2002). Incidencia Económica Del Deporte.

Riera, A. (2003). Análisis Comparado Del Uso Del Deporte En La Publicidad Televisiva En España. Tesis Doctoral. Lleida: Universidad De Lleida.

Villalba, F. (Director) (2002). Deporte Y Economía: Una Cuantificación De La Demanda Deportiva En Andalucía. Málaga: Fundación Unicaja Olímpica.

Vv.Aa. (1996). Patrocinio, Comercialización Y Deporte. La Comercialización Del Deporte En Una Sociedad Mediática. Publicidad Y Patrocinio En Eventos Deportivos. Madrid: Csd.

AUTHOR BIOGRAPHIES

ANTONIO CHACÓN Bachelor of Sciences in Economics and Master of Sciences in International Economic Analysis by University Rey Juan Carlos. He is currently working in *Banco de España* being responsable for the analysis and compliance of the rules and procedures related to the banknotes' lodging by cash handlers and established by the Eurosystem

JAVIER OTAMENDI received the B.S. and M.S. degrees in Industrial Engineering at Oklahoma State University, where he developed his interests in Simulation and Total Quality Management. Back in his home country of Spain, he received a B.S. in Business Administration and a Ph.D. in Industrial Engineering. He is currently a simulation and statistics consultant and university professor at the Rey Juan Carlos University in Madrid.