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## **Measuring Competitiveness of Nations in Elite Sport Policies: Renewing the Debate on Comparing Nations**

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International comparative studies are one of the most complicated areas of research (e.g. Henry, Amara, and Al-Tauqi, 2005; Porter, 1990). In sport the issue is even more convoluted because sports systems are closely enmeshed with the culture of a nation and (elite) sport development is dominated to a large degree by a nation's political system (Houlihan, 1997; Houlihan and Green, 2008). There are many extraneous and uncontrollable factors that make comparability problematic. As a result there are not many comparative sports studies, except those that exist mainly on a descriptive basis and which examine general trends and similarities among nations for instance in elite sport (see, for example, Bergsgard *et al.*, 2007; Digel, Burk and Fahrner, 2006; Green and Houlihan, 2005; 2008; Oakley and Green, 2001). Bergsgard *et al.* (2007) indicated that many international comparative studies fail to establish analytical relationships between variables. Furthermore there appears to be a lack of standardisation of research methods used to make comparisons, as well as limited publicly available and quantifiable data on sport policies (Henry *et al.*, 2005). This paper will explore a method to compare elite sport policies of nations on a mixed quantitative and qualitative basis. This study is part of a large scale project, called SPLISS study (Sports Policy factors Leading to International Sporting Success) which aimed to compare the determinants of competitiveness in elite sport (De Bosscher *et al.*, 2007; 2008).

To our knowledge, there are no studies that actually measure competitiveness in the sports sector. While governments and other institutions worldwide intervene directly in elite sport development by making considerable financial investments, there is a gap in

literature on the determinants of competitiveness and how to measure and compare these factors. Useful methodological insights can be observed when considering research beyond the sport sector, for example in the economic sector where the concept of competitiveness is more developed, notably in the fields of international trade, industrial organization and business economics (Siggel, 2003). Hence, reflecting to economic competitiveness studies, this paper will illustrate how a scoring system was developed in order to compare the elite sport policies of six nations objectively and thus to move beyond the descriptive level of analysis. We endeavour to simulate debate in the field of international comparative sports research by quantification of data and the introduction of 'measurement' on a subject (comparing elite sport policies and systems) that is essentially qualitative in nature. This methodology was used to test a conceptual model in an empirical context in a pilot study, where elite sport policies and systems were compared in six nations.

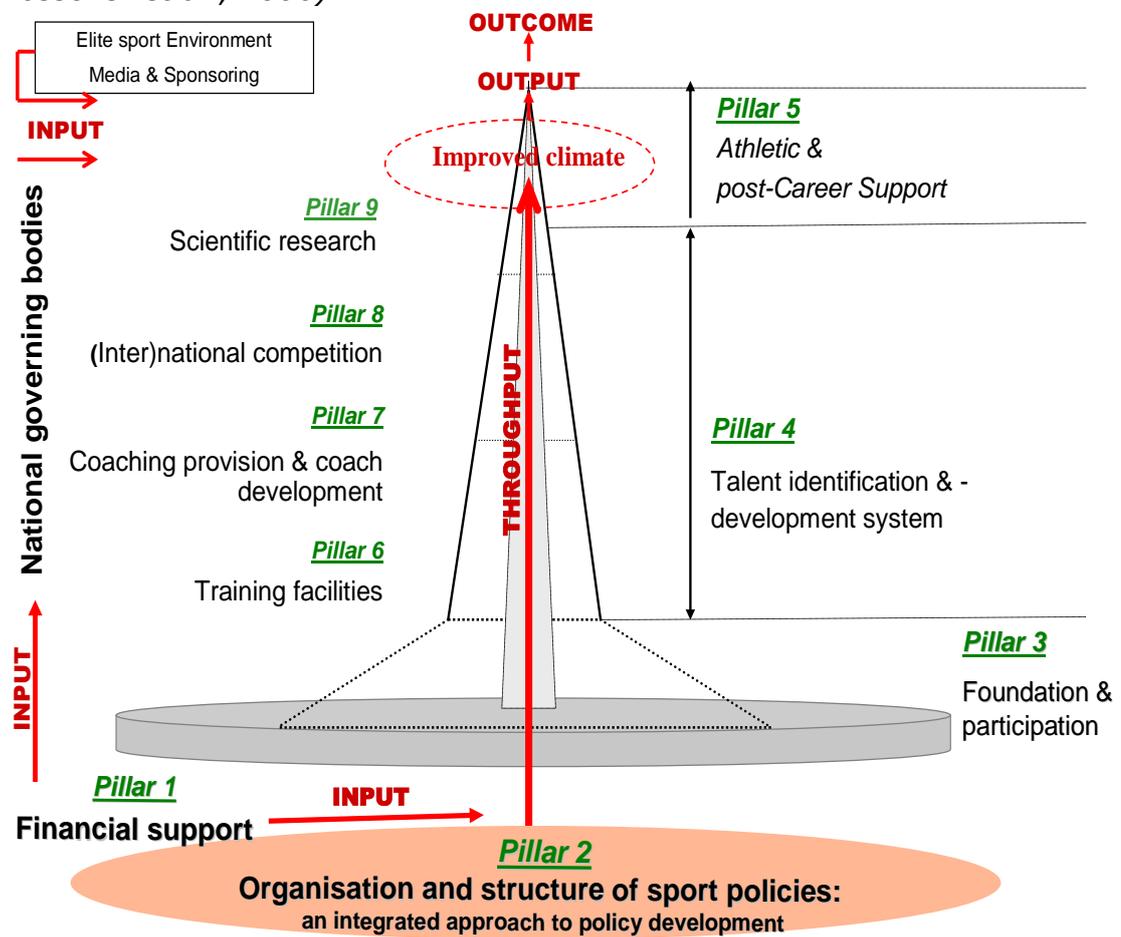
This paper is structured as follows. The first section will describe the theoretical framework that has been used to compare the six sample nations. Subsequently the core of this chapter consists of the methods used to translate the critical factors into scores. Finally, the discussion section will focus on the strengths and limitations of these methods.

### **A Theoretical Framework of Sports Policy Factors Leading to International Sporting Success (SPLISS)**

Referring to (macro)-economic studies the concept of competitiveness, or competitive advantage, has been given numerous interpretations and tends to be inconclusive (Krugman, 1996; Önsel, *et al.*, 2008; Porter, 1990; Siggel, 2003). As Porter (1990) points out "instead of seeking to explain 'competitiveness' at the national level, we must first understand the determinants of productivity" (p.9). Porter (1990) identified and aggregated the characteristics of national competitive advantage into a systemic model, called the 'competitiveness diamond', consisting of four determinants that are compared in the ten most competitive nations. Reflecting this seminal work of Porter (1990), De Bosscher *et al.* (2006) developed the first elite sport conceptual model, called the SPLISS model. This conceptual model aimed to identify the determinants of productivity in elite sport at the meso level, or those determinants that can be influenced by human impact. Macro-level factors (such as population, wealth, cultural factors, religion, urbanization and natural resources) are not included in this study. Inductive procedures were used to consolidate all relevant sources from a comprehensive body of literature on different elite sport

systems (Riordan, 1989; Clumpner, 1994; Digel *et al.*, 2006; Green and Houlihan, 2005; Oakley and Green, 2001) supplemented by studies at the micro-level that attempt to understand success determinants for individual rather than nations (Conzelmann and Nagel, 2003; Duffy, Lyons, Moran *et al.*, 2001; Greenleaf Gould and Diefen, 2001; Van Bottenburg, 2000). It was concluded that all factors in sport policy that may increase the chances of elite sporting success, can be distilled down to nine key areas or 'pillars'. These are situated at three different levels according to the effectiveness literature (Chelladurai, 2001), as shown in Figure 1.

**Figure 1. SPLISS Model: A Conceptual Model of 9 Pillars of Sports Policy Factors Leading to International Sporting Success (De Bosscher *et al.*, 2006)**



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'Inputs' are reflected in pillar 1, as the financial support for elite sport. Having the financial resources in elite sport does not guarantee success. There is need for a strong support structure which is willing to invest its resources in the most efficient and

effective way (De Bosscher *et al.*, 2007). This is reflected in pillars 2-9 as the 'throughputs', which refer to the efficiency of sport policies, that is, the optimum way that inputs can be managed to produce the required outputs.

The pillars presented in Figure 1 are nine general elite sport policy dimensions for which it can be assumed that all the factors that can be influenced by sport policies, can be classified under one of these pillars. It was indicated in this research that: *'its function is not deterministic: rather it aims to identify pivotal issues and to generate crucial questions in a benchmark study of elite sport systems'* (De Bosscher *et al.*, 2006:209). This model therefore provides only a tentative theoretical conclusion on sports policy factors leading to international sporting success, or the competitiveness factors of an elite sport policy. The model is multidimensional, based on input and throughput indicators and was operationalised into more than 100 detailed critical success factors (CSF) that allowed a more analytical and objective comparison of the pillars.

## **A Method to Measure Competitiveness**

For more than 25 years measuring the economic competitiveness (and economic growth prospects) of countries and their underlying factors has been a focus for research (Ochel and Röhen, 2006). Although a sport policy setting differs from an economic setting, notably because its goals are not financially focused, the basic principles of competitiveness studies are quite similar in design. For example in the World Competitiveness Yearbook (IMD, International Institute for Management Development), 55 economies are analyzed and ranked on 331 criteria that are grouped into 20 factors and then regrouped into four competitiveness determinants (Rosselet, 2008). In the World Economic Forum (WEF, 2008), three component indices are calculated on the basis of 35 sub-indices. In other indices, such as the Economic Freedom of the World index (Fraser), the 21 components in five major areas are incorporated into the index, made up of several sub-components. And in the Heritage Foundation Index of Economic Freedom 50 independent variables are divided into 10 broad factors of economic freedom (Ochel and Röhen, 2006). Each of these indices uses different scoring methods, standardization methods and weightings, but essentially the construction of the indices is very similar. Both hard data and soft data (surveys) are used to collect the data. These data are scored and then aggregated into a final score for each dimension, possibly after weightings. A comparison of the methods used in the four economic measurements mentioned above, is provided in Appendix A and compared with the SPLISS methods used in this study.

Consistent with these studies, this article details how the critical success factors of the nine pillar model were transformed into measurable units that are individually scored and aggregated into a final score for each pillar. One main difference from these economic studies is related to the scale of the research, as only six nations have been compared. This implies that methods other than statistical analyses have been used to determine scores and weightings. These were based mainly on expert opinion and constant comparison of meanings. Therefore the SPLISS study was coordinated by an international consortium group of seven researchers from three countries (Belgium (Flanders), the Netherlands and the United Kingdom). As the members were all internationally recognized researchers in elite sport, and in close contact with elite sport policy agencies in their nations, they acted as a group of experts throughout this research. Their role was to validate and refine the conceptual model, to operationalise the CSF, to supervise the objectivity of the data analysis, to assure internal validity and reliability, to ensure the international comparability of data, and to discuss the standards for comparison (De Bosscher *et al.*, 2008). As a result of this extensive process, the research took four years. The methodological approach of involving experts is proposed in several works on qualitative research methodologies (De Pelsmacker and Van Kenhove, 1999; Gliner and Morgan, 2000).

## **Data Collection**

The six countries involved in the pilot study were: Belgium (separated into Flanders and Wallonia<sup>1</sup>), Canada, Italy, the Netherlands, Norway, and the United Kingdom (De Bosscher *et al.*, 2008). The selection of these nations was initially based on (1) the sport performances including good, medium and poorly achieving nations with the aim of observing differences in policies, (2) the countries' socio-economic nature (western industrialised countries) and (3) a broadly comparable cultural background (general social development and population, sociology, ethnography).

Similar to the economic indices, qualitative and quantitative data were used and were subsequently compared through the collection of both hard data and by means of surveys for perceived data.

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<sup>1</sup>Flanders is the northern, Dutch speaking part of Belgium, Wallonia the southern, French and German speaking part. In Belgium, the Flemish community (Flanders) and the French/German speaking community (Wallonia) have separate sport policies at each level, from local to national (including three separate ministers of sport). Apart from the Olympic Committee (BOIC), whose main task is to select athletes for the Olympic Games, there is no national (federal) policy or structure for sport, nor are there expenditures on sport at federal level. Therefore, Flanders and Wallonia have participated in this research as if they were two distinct nations.

Accordingly this study integrated two basic instruments to measure the critical success factors in nine pillars. In the first -called the 'elite sport climate' survey (Van Bottenburg, 2000)- all participating countries undertook surveys of athletes, coaches, and performance directors, using self completion questionnaires prior. The use of surveys is advised to provide qualitative information on concepts that are difficult to measure (Ochel and Röhen, 2006), but they can be assessed by their primary users, in this case the athletes and their coaches. A second instrument was used to measure hard data, called the 'overall sport policy' questionnaire and included open ended and closed questions for each pillar. Whilst in the economic studies these data are taken from statistics of international organisations, in elite sport there is a distinct lack of standardised data. Hence, the researchers in each country completed an extensive semi-structured questionnaire on objective indicators or 'facts', with 84 open-ended and closed questions in the nine pillars, including their evolution over the past ten years. Depending on the data available and on the knowledge of the researcher, interviews with members of the National Olympic Committee and national governing bodies of sport (NGBs) were conducted in order to provide answers to all of the CSFs. The method in this paper will be illustrated by focussing on one -arbitrarily chosen- pillar in particular, pillar 5: athletic and post athletic career support.

## **Response**

For the elite sport climate survey, the targeted response rate from athletes, coaches, and performance directors was 30 per cent which is a reasonable return for postal surveys (De Pelsmacker and Van Kenhove, 1999). Table 1 provides an overview of the responses by nation, respondent type, and response rates (De Bosscher *et al.*, 2008). A total of 1090 athletes, 253 coaches and 71 performance directors in six nations responded to the questionnaires.

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**Table 1:** Overview of response rates from athletes, coaches, and performance directors in the six sample nations

	<i>Athletes</i>		<i>Coaches</i>		<i>Performance directors</i>	
	<i>Response</i>	<i>%</i>	<i>Response</i>	<i>%</i>	<i>Response</i>	<i>%</i>
The Netherlands	421	34%	62	28%	28	52%
UK	279	47%	23	8%	x	x
Flanders	140	43%	119	51%	26	100%
Canada	132	16%	x	x	11	32%
Wallonia	63	41%	16	20%	06	19%
Norway	55	58%	x	x	x	x
Italy	x	x	32	64%	x	x
TOTAL	1090	34%	253	29%	71	45%

Source: De Bosscher *et al.*, 2008

As can be seen in Table 1, the elite sport climate surveys from the six nations (seven regions) working together on this research differ significantly in terms of sample sizes. This is indicative of the opportunistic nature of the research and the limited funds secured by some nations to administer the elite sport climate survey (De Bosscher *et al.*, 2008). The data from several nations involved only a relatively small number of respondents. Despite the limitations of the sample, and bearing in mind that all six sample nations also conducted lengthy overall sport policy questionnaires (on which the majority (two-thirds) of CSFs are based), the research should be regarded as a useful step towards understanding the issues involved in making cross-national comparisons of elite sport systems. The unique feature of the research is that in addition to measuring easily quantifiable variables, such as inputs (*e.g.*, money) and outputs (*e.g.*, medals), it has also delved into understanding the 'black box' of throughput both in terms of the existence of various system components and the rating that athletes, coaches, and performance directors provided to these system components (De Bosscher *et al.*, 2008).

### **Data Analysis: Development of a Scoring System**

Similarly to the economic competitiveness studies, all CSF were allocated a score on a one to five point scale, with 'one' indicating little development and 'five' for a high level of development. There is no general consensus on the use of scales (Ochel and Röhen, 2006). Depending on the source (elite sport climate survey or overall sport policy questionnaire) and type of question (open-ended, dichotomous, or assessment), the standards for this five point scale differed (De Bosscher *et al.*, 2008). Generally there were three types of ratings.

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1. The most complex ratings were derived from the overall policy questionnaire, because qualitative information on the elite sport systems for each pillar had to be transformed into a score for a five point scale. These (mostly) open-ended questions were grouped into categories to define the standards. Generally, the existence of specific aspects of the elite sport system were assessed in terms of 'availability of the criterion in a stronger or weaker form', to indicate the level of development. For each CSF, the standards and ratings were discussed within the consortium group until consensus was reached and, if necessary, further clarification of answers was sought from the researchers concerned.
2. In the elite sport climate survey quantitative data were available based on two types of questions: dichotomous questions (yes/no) and ratings on a five point Likert scale (ordinal). For the dichotomous questions absolute standards were used. When the CSFs contained several sub-indicators the scores were aggregated taking into account the non available answers. For the Likert scale questions 'net ratings' (i.e., positive answers minus negative answers) were calculated.

**Figure 2.** An Illustration of Pillar 5: Aggregation of Scores of Several CSFs into One Overall Percentage Score. General Score of Pillar 5 on Facts or Hard Data

W	Weights for each CSF	Critical Success Factors (CSF)	CAN	FLA	ITA	NED	NOR	UK	WAL	
		<i>Stage 1: the career of elite athletes: individual lifestyle support</i>								
2		Athletes receive direct financial support (a monthly wage) to become a professional/fulltime athlete	4			5	4	4	5	
2		Coordinated support programme for elite level athletes (apart from financial support)	5			5	4	5	2	
1		<i>Total gross annual income (non-student athletes)</i>	3			5	4	5	na	
1		<i>Gross annual income from sport activities of athletes (non-student athletes)</i>	2			na	3	5	na	
1		<i>Kind of facilities that athletes can make use of (according to athletes)</i>	na			2	3	na	na	
		<i>Stage 2: the post athletic career</i>								
3		Support for athletes at the end of their career	4	1	3	4	4	4	1	
		Sum of (the points for each nation x weight)	TOTAL points	35	21	27	39	38	40	17
		Maximum score that each nation can have, taking into account the number of 'non available' answers (=weight for each CSF x 5)	MAX	45	45	35	45	50	45	35
			es NA	1	1	1	1	0	1	3
		Percentage scores = total points/MAX	Total score for pillar 5	77,78	46,67	77,14	86,67	76,00	88,89	48,57
		na: data not available; W: weight								
		<i>Italic text: results from elite sports climate survey</i> ; non italic text: results deriving from the overall sport policy questionnaire								
		NB:Wallony supplied data on relatively few criteria								

Next, the 1-5 scores on all the CSF were aggregated into one final percentage score, by taking into account the number of 'not

available' (n/a) answers, given that not all countries achieved a score on the same number of criteria (De Bosscher *et al.*, 2008). When two thirds of the answers were not available for any nation, a score for that pillar was not calculated. When only two nations responded to a criterion, the criterion was deleted. A final percentage score was then calculated which ranged from 20 per cent to 100 per cent. Scores lower than 20 per cent are not possible as each nation received at least 1 point for each CSF. This was a deliberate choice because seldom is there 'no development' at any level of sport policies. Finally, the criteria were weighted to reflect the consortium's view of their relative importance. Figure 2 shows how six CSFs on the objective scale and five CSFs on a subjective scale are aggregated into a final percentage score for Pillar 5 (athletic career and post career support) as an example. A similar approach was taken for the other eight pillars.

In order to enhance the internal validity of the scoring system (De Pelsmacker and Van Kenhove, 1999), the consortium group held several meetings devoted to the verification of the standards used to categorize the nations into five classes and to agree the weightings for each CSF.

### **Results on Pillar 5: Athletic and Post Career Support**

**Figure 3.** Competitive Analysis (traffic light, here in black and white) of Six Nations for Pillar 5: Athletic Career and Post Career Support B. General Score of Pillar 5 on perceived Data or Assessment

W		CAN	FLA	ITA	NED	NOR	UK	WAL
5	General satisfaction with the support package that athletes receive	4	3	na	5	4	na	na
1	Rating level of sport specific coaches (acc. to athletes)	na			5	5	na	na
1	Rating level of (para)medical coaches (acc. to athletes)	na			5	4	na	na
1	Rating level of social & business support (acc. to athletes)	na	4	na	3	1	na	na
1	Satisfaction with attitude of the employer (acc. to athletes)	5	5	na	5	5	na	na
TOTAL points for assessment		25	34		43	35		
	Max	30	45		45	45		
	number of times NA	3	0	4	0	0	4	4
Total score for assessment of pillar 5		83,33	75,56	NA	95,56	77,78	NA	NA
na: data not available; W: weight								
blue text: results from elite sports climate survey; black text: results deriving from the overall sport policy questionnaire								
NB: Canada supplied data on relatively few criteria and scores were not calculated for the UK, Wallonia and Italy due to the low number of responses from coaches in the survey								

**Legend**

CAN	Canada	NOR	Norway
FLA	Flanders	UK	United Kingdom
ITA	Italy	WAL	Wallony
NED	the Netherlands		

(Adapted from De Bosscher *et al.*, 2008)

This section provides only a summary of the results for Pillar 5, since the intention of this paper is to explore a method for measuring the competitiveness of elite sport policies, rather than comparing the policies themselves (De Bosscher *et al.*, 2008). It shows however that quantitative measurements and descriptive evaluation should complement each other. To simplify the presentation of results and to identify any specific characteristics and trends, each nation (for each pillar) was allocated a colour-coded score or 'traffic light' (black and white in this book), varying from a policy area being 'very well developed' to having 'little or no development' according to a five point scale with a range of 16 percentage points between each category (80 per cent range divided over five categories). Figure 3 presents the results for Pillar 5, only for the hard data inputs (objective evaluation) as an illustration (De Bosscher *et al.*, 2008).

All of the sample nations, apart from Belgium, perform particularly well against the criteria in the competitive and post-career stages of an elite athlete's career. It is apparent that sports authorities are taking a holistic view of athletes' careers. Talented athletes pursuing their sport are recognised as and treated as employees. Funding for living and sporting costs linked to the minimum wage is in place and athletes can also access a range of other lifestyle support services. In the Netherlands and Belgium

athletes are paid a wage so they can train and compete as a full time athlete. This differs from the UK where there is no bottom limit to means tested awards; therefore almost half of UK athletes (46 per cent) were in some form of employment to supplement their income. In 2003 525 athletes received funding through the World Class Performance Programme (WCPP) and additionally 270 athletes are supported via equivalent 'national' (rather than UK) programmes (that is, those with separate English, Welsh, Scottish and Northern Irish governing bodies). For Canadian athletes financial assistance is available through the AAP (Athlete Assistance Programme) programme. Sometimes support is also provided at provincial level with a good example being Ontario and Quebec. In Norway elite athletes receive reimbursements according to their performance in competition. Finally in Italy, financial support is not managed in a centralised way by a unique national body; rather it is dependent on the specific budget and criteria decided by each sport's National Governing Body. About 400 athletes receive financial support for their activities twice a year from CONI via National Governing Bodies.

The only nation which is rated as having a fairly low level of development in Figure 3 is Belgium (both Flanders and Wallonia). Both regions have minimal lifestyle support mechanisms (except from financial support), and support for athletes at the end of their careers is considered to be poor. For example Norway provides a '24 hour athlete' service where athletes are entitled to medical support, training, nutritional and educational advice at any time of the day. Athletes with an A-status in the Netherlands can make use of the advice of three counsellors and of one of the 12 regional support centres networks, where B-rated athletes can also receive advice. Similar opportunities are in place in the UK. Many athletes are insufficiently prepared for life after sports (Anderson and Morris, 2000). Consequently, national sports agencies in various countries have developed programmes to help with this transition both for the benefit of the athletes concerned and their respective sports. This is the case in all nations except Belgium. Support services range from career coaching and counselling (the Netherlands, UK), workshops (the Netherlands, Canada), financial loans (Canada), access to different services (such as 'Performance Lifestyle' in the UK and career planning in Norway) and employment services (the Netherlands, Italy).

## **Discussion**

This paper illustrated how a scoring system was developed in order to compare elite sport policies of six nations objectively and thus to move beyond the descriptive level of comparison. Drawing

its influences from economic competitiveness measurements, this method was based on three essential features:

- (1) The development of a theoretical model of success determinants in elite sport with the identification of clear critical success factors that are used for international comparison;
- (2) The development of a scoring system to measure competitiveness of nations in elite sport for each dimension of the theoretical model and thus to move beyond the descriptive level of comparison; and
- (3) The involvement of the main stakeholders in elite sport - the athletes, coaches and performance directors- as the evaluators of policy processes in elite sport.

This method was tested in a pilot study reflected in the name SPLISS: Sports Policy factors Leading to International Sporting Success. This SPLISS group is currently extending its activities on a wider scale, both at the overall and sport specific level, in order to validate and develop theories on the key determinants of success and to explore validated methods in international comparative research. The key point of this paper is that it shows how the methods developed by the SPLISS group are highly comparable with economic studies.

The scoring system in this study was developed with one belief in mind: that is, it can deliver an objective comparison of nations and policies, based on concrete CSFs and standards. This can be regarded as a potentially useful means of helping policy makers and institutions to assess the performance of their sport system in comparable terms and to undertake appropriate remedial strategies. To date however, in economic studies as well as our study, there has been limited critical interrogation of how valid and useful these measurements are with respect to their ability to provide insights into what drives competitiveness and to generate robust predictions of future performance (Ochel and Röhn, 2006). Whilst objective scores can be calculated in the elite sport climate survey, the definition of standards in the overall sport questionnaire is somewhat arbitrary because of the absence of clear standards to rate an elite sport system objectively. It is based on comparative country data (where more is often better) and on the opinions of experts. The small sample of nations does not allow statistical techniques similar to the economic studies to identify the standards for comparison and weights, for example the deviation between the four highest and lowest ranked nations (min-max method), quartiles, normalizations or other transformations. Therefore the method needs to be further explored in terms of its construct validity. In contrary to existing comparative elite sport studies (*e.g.*

Bergsgard *et al.*, 2007; Houlihan and Green; 2008, Digel *et al.*, 2006), the unique feature of this study is that it assesses processes by means of an elite sport climate survey (both objective and subjective data) with the main stakeholders in elite sport and that these responses are included in the scoring system. Furthermore an econometric approach can be used in order to refine the SPLISS model: to identify the most important factors and to establish weights for each CSF. Thus, the SPLISS model needs to be explored in more nations and for specific sports (or 'industries'). These are the aims of future SPLISS research.

## **Conclusion**

This study echoed economic studies, believing that measuring competitiveness of a nation in elite sport can be reflected in the way a nation competes in economic terms. An individual sport can thus be compared to an industry and the nation is the environment that shapes the preconditions for these industries or sports. There are however also a few differences. Economies are driven by the exchange of demand and supply. In elite sport, the demand side is in part covered by Oakley and Green (2001) who describe the increased demand for sporting success as a 'global sporting arms race': more nations are competing for a fixed number of medals and the qualification rules are determined by international organisations, such as the IOC. As a result, some nations have seen their share of international sporting success reduced as a direct consequence of increased competition. This has led to massive investment in elite sport in many nations. Elite sport is distinct from economies in these elements. From these arguments, it is reasonable to accept that high performance sport cannot be blindly compared with economies. The key point of this study is that research methods are mixed and nations are compared on the basis of qualitative analysis and guided with an objective measurement tool. It was therefore of major importance in this study that quantitative findings alone were not sufficient to assess the quality of elite sport systems. The scoring system is a supportive and tangible way of understanding elite sport policies more broadly in relation to sporting success, rather than an isolated competitiveness measurement or ranking system on its own. Qualitative description of elite sport policies and how they are formed remain essential units, even in a quantitative sport comparison. In this respect the scoring system is merely a guiding system as part of an overall qualitative and quantitative evaluation.

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