Athens Journal of Sports, 2026, 13: 1-26
https://doi.org/10.30958/ajspo.X-Y-Z

Competitive Stakes: Definition and Measurement

*By Patrice Bouvet**

Sports economists explain interest in sporting contests mainly through competitive balance and, more recently, competitive intensity. The stakes of contests are addressed only indirectly in this literature and have never been the subject of a specific definition or measure. This article (1) defines competitive stakes and distinguishes them from neighboring concepts (competitive balance, competitive intensity, prestige, perceived importance, public interest), (2) breaks them down into three dimensions – the history of the contest, its prestige and the consequences of its result – and (3) proposes an ex ante coding protocol that yields a level of competitive stakes between 1 and 63 points. The weighting rests on explicit theoretical assumptions rather than on empirical analysis. For twenty contests played on March 31, 2024, the approach proves applicable using public information. A sensitivity analysis shows that the resulting ranking is little affected by the configuration coefficients but is sensitive to the hierarchy among the dimensions.

Keywords: *competitive stakes; public interest; measurement; competitive balance; competitive intensity.*

Introduction

Violence is on the rise on sports fields in many countries: assaults, racist remarks, projectile throwing and acts of vandalism are frequent there[1]. Many observers attribute it to the economic and symbolic stakes that professional sport now concentrates: the stakes are said to have become the enemy of the game[2]. Social psychology also shows that rivalry can lead competitors to break norms to win (Kilduff et al., 2016). Without downplaying these excesses, one can defend the opposite thesis: the stakes are also what gives meaning to sporting contests and generates interest in them (Andreff, 2012). Understanding the interest that (TV) spectators take in them, as well as the risks they create, therefore requires being able to characterize and measure the stakes.

Sports economics measures public interest through audiences and stadium attendance (Artero et al., 2019) and explains it with many variables (Andreff, 2025). Two concepts dominate the analysis of the determinants specific to the contest: competitive balance and competitive intensity, which was introduced to overcome

*MCF, Université of Poitiers, France.

[1]According to the report of the French National Division for Combating Hooliganism (DNLH), 910 people were arrested in France on the sidelines of football (soccer) matches during the 2024–2025 season, an increase of 26.7% over the 2023–2024 season; 83 professional football matches gave rise to notable incidents. Source: https://www.vie-publique.fr/en-bref/301967-hooliganisme-dans-le-football-le-bilan-du-ministere-de-linterieur

[2]See for example https://www.lemonde.fr/blog/latta/2013/06/03/le-jeu-lenjeu-le-spectacle/

the limits of the former by reintroducing the stakes. Yet, paradoxically, the stakes remain either absent or treated indirectly in this work, and almost exclusively oriented toward the future (qualification, title, relegation). Andreff (2012, p. 324) also notes that the first indicators of match stakes, proposed in the 1980s, were hardly pursued any further[3].

The gap this article seeks to fill is threefold: (i) the stakes are not defined autonomously; (ii) they are almost always reduced to their future consequences, whereas the history of the contest and its context also influence the importance that participants and spectators attach to it; (iii) there is no transparent, reproducible measurement procedure that can be transposed from one sport to another. Three research questions are as follows:

> RQ1**.** How can the competitive stakes of a sporting contest be defined and distinguished from neighboring concepts (competitive balance, competitive intensity, prestige, perceived importance, public interest)?
> RQ2**.** What dimensions make them up, and how can they be operationalized in an explicit and reproducible coding procedure that applies equally to team sports and individual sports?
> RQ3**.** Is this procedure workable using public information, does it distinguish contests of different levels, and to what extent do its results depend on the weighting assumptions adopted?

Our contribution is conceptual (definition, past–present–future temporal structure of the stakes, articulation with the determinants of public interest), methodological (exploratory instrument, documented coding rules, sensitivity analysis) and practical (differentiated uses depending on stakeholders). It is exploratory: the empirical application is strictly illustrative and does not claim to validate the instrument. The propositions and the validation program in Section 6 specify what future research could establish in this respect.

The article is organized as follows. Section 2 examines the place of the stakes in sports economics and identifies the gap in literature. Section 3 presents the conceptual framework (RQ1). Section 4 sets out the methodology: variables, coding rules, aggregation, justification of the weighting and application protocol (RQ2). Section 5 presents illustrative application and sensitivity analysis (RQ3). Section 6 discusses theoretical contributions, managerial implications, limitations and avenues for research. Section 7 concludes.

[3] "Some twenty years ago, a few studies paved the way for an analysis of sporting stakes and defined indicators of match stakes, but this line of research was subsequently abandoned" (Andreff, 2012, p. 324; our translation).

Literature Review: The Place of the Stakes in the Analysis of Interest in Sporting Contests

Competitive Balance and Competitive Intensity

Sports economists have long explained public interest through a now-classic chain: sporting forces of similar strength produce balanced matches, hence matches whose outcome is uncertain, hence attractive to (TV) spectators. Rottenberg (1956) laid the first link of this reasoning by associating the balance of forces with stadium attendance; Neale (1964) stressed the second: the more uncertain a competition, the higher public interest and league revenues would be (Andreff, 2012; 2025). Two consequences follow: the impossibility of a monopoly, owing to the interdependence of teams (Jones, 1969; Sloane, 1971), and the need for regulation aimed at preserving competitive balance (Rouger, 2000; Dermit-Richard, 2012; Garcia-del-Barrio & Rossi, 2020; Ramchandani et al., 2023).

Competitive balance is one of the few concepts truly specific to sports economics: it distinguishes sporting events from other live performances, for which outcome uncertainty is meaningless. It has given rise to numerous definitions (Kringstad & Gerrard, 2007) and measures (Groot, 2008; Evans, 2014; Doria & Nalebuff, 2021; Andreff, 2025, lists about ten) and feeds an abundant literature[4]: effectiveness of regulatory instruments (Késenne, 2000; Fort & Maxcy, 2003; Plumley et al., 2019; Avila-Cano & Triguero-Ruiz, 2023), competition design (Szymanski, 2003, 2012; Owen & King, 2015), audiences (Forrest et al., 2005; Di Domizio, 2010; Rodríguez-Gutiérrez & Fernández-Blanco, 2017), attendances (Schmidt & Berri, 2001; Coates & Humphreys, 2010; Sung et al., 2020; Mangeloja & Szeróvay, 2024), recruitment (Flores et al., 2010; Meletakos et al., 2016) and clubs' financial health (Andreff, 2009; Carreras & Garcia, 2018).

Six main criticisms are nevertheless leveled at it (Bouvet, 2020), including that it completely disregards the stakes. This observation led to the introduction of the concepts of perceived competitive balance (Pawlowski & Budzinski, 2013) and, above all, competitive intensity (Kringstad & Gerrard, 2004). The latter aims to go beyond competitive balance by adding the stakes:

Competitive intensity 1 = competitive balance + stakes

The two authors do not, however, spell out what they mean by stakes, which they equate with important consequences of the result (qualification, final victory, relegation). Scelles and Durand (2010) add reversals:

Competitive intensity 2 = competitive balance + stakes + reversals

Competitive intensity is estimated for a match (intra-match intensity; Scelles et al., 2011; Scelles, 2021) or for a championship (intra-championship intensity; Scelles et al., 2013; Wagner et al., 2022). In both cases, it combines an uncertainty

[4]For the journal *Journal of Sports Economics* alone, 530 articles address this theme directly or indirectly (authors' count, 2026).

component (the possibility that the state of the score, or of the standings, is altered in the short term) and a fluctuation component (reversals observed). The stakes are thus not introduced explicitly but indirectly, through the possibility and frequency of reversals.

This approach has a major merit: it leads to recommendations on competition formats (Scelles & Durand, 2010; 2012), and several measures of it have been proposed (Wagner et al., 2020; Andreff & Scelles, 2021; Guironnet, 2023). It nevertheless calls for three remarks. It relies heavily on the notion of reversal, which is appealing but defined in a debatable way. It applies without difficulty to team sports, less easily to individual sports and to competitions with many participants (Cabaud et al., 2016). Finally, as Scelles and Durand acknowledge[5], the stakes are considered only indirectly and solely through the course of the match or competition.

Other Determinants relating to the Contest

Competitive balance and intensity do not exhaust the question of public interest. Five other determinants relating to the contest can (and should) be taken into account[6] : the presence of stars, the level of play, the atmosphere, the experience lived in the venue and the stakes. The first two relate to the actions performed on the field; the other three are external to it.

The superstar effect. Since Rosen (1981) and Adler (2006), the superstar effect has designated the externality produced by the presence of stars in competitions. It has been studied with respect to the performance of other competitors (Babington et al., 2020; Meissner et al., 2021), team pay (Lucifora & Simmons, 2003; Kuethe & Motamed, 2010), marketing impact (Hoegele et al., 2014) and, above all, appeal to fans, in terms of audiences (Hausman & Leonard, 1997; Berri & Schmidt, 2006) as well as attendances (Brandes et al., 2008; Chmait et al., 2020). The effect is heterogeneous across stars and depends on their level of play and their geographic proximity to fans (Grimshaw & Larson, 2021). Since stars are reputed to be "decisive," that is, particularly strong in high-stakes matches, the interaction between the presence of stars and the stakes is, to our knowledge, an unexplored avenue of research.

The level of play. Few studies deal with the level of play of professional athletes (Buraimo et al., 2006; Buraimo & Simmons, 2009; Madden, 2012; de Saá Guerra et al., 2012). Bouvet (2020) proposes measuring "competitive exceptionality," that is, the gap in technical level between professionals and amateurs, based on interviews with football, tennis and golf coaches. This indicator concerns the quality of technical movements, independently of the context of the match, and therefore does not take its stakes into account.

Atmosphere and lived experience. Work on stadium atmosphere (Uhrich & Koenigstorfer, 2009; Uhrich & Benkenstein, 2010; Chen et al., 2013), inspired by

[5]"The model makes no explicit reference to sporting stakes" (Scelles & Durand, 2010, p. 43; our translation).

[6]More broadly, spectators' preferences, their socioeconomic profiles, their incomes, market size, the price of the sporting event, certain circumstantial variables, violence and the economic and health situation can also be taken into account.

environmental psychology (Mehrabian & Russell, 1974), and work on the experience lived in the venue, from the *sportscape* (Wakefield et al., 1996) to the digital experience (Biscaia et al., 2024; Zhang et al., 2025) by way of perceived service quality (Yoshida & James, 2010), shows that these factors influence enjoyment, satisfaction and intention to return. None of them incorporates the stakes of the contest.

The Stakes: A Determinant mentioned but poorly defined

In its broadest sense, the stakes are what one can win, or lose, in any undertaking. In sport, they are therefore closely tied to the result of contests. Although central, the notion is little studied in the specialized literature, probably for two reasons: the stakes are less salient in closed leagues than in open leagues (risk of relegation) or in certain individual sports (risk of exclusion), and their more qualitative nature makes them hard to introduce into mathematical functions.

The match-importance indicators proposed in the 1980s (Jennett, 1984; Borland, 1987; Cairns, 1987) count the number of remaining matches in which the clubs concerned can still win the title. They raise two questions: are the stakes of a contest defined solely by future events? And when there is no risk of exclusion from competition (relegation, loss of the right to play), is it not nevertheless essential to win, for symbolic reasons for example? Table 1 summarizes the treatment of the stakes in the main frameworks for analyzing public interest.

Table 1. *Place of the Stakes in the Main Frameworks for analyzing Public Interest*

Framework of analysis	What is measured	Place of the stakes	Main limitation
Competitive balance (Rottenberg, 1956; Neale, 1964)	Gap in strengths; *ex ante* uncertainty of the result	Absent	Ignore what the result puts at stake
Match importance (Jennett, 1984; Borland, 1987; Cairns, 1987)	Number of remaining matches in which the title can still be won	Central, but limited to the future and to the standings	Excludes history and context; poorly suited outside league championships
Competitive intensity (Kringstad & Gerrard, 2004; Scelles & Durand, 2010)	Balance, stakes and reversals, intra-match or intra-championship	Indirect (via reversals)	Stakes undefined; difficult to transpose to individual sports
Superstar effect and level of play (Rosen, 1981; Bouvet, 2020)	Presence of stars; gap in technical level	Absent	Independent of the context of the contest
Atmosphere and lived experience (Wakefield et al., 1996; Uhrich & Benkenstein, 2010)	Perception of the stadium environment	Absent	Concern the audience present, not the sporting content

Source: author's synthesis based on the literature cited.

The notion of stakes must therefore be clarified. That is precisely the purpose of the following sections.

Conceptual Framework: Defining Competitive Stakes

Definition

In its broadest sense, the stakes are what one can win – or lose – in an undertaking. Applied to sport, we define them as follows:

> *The competitive stakes of a sporting contest are the set of real (sporting and economic) and symbolic (perceived) consequences that may flow from its result, in a given context.*

This definition calls for three clarifications. First, competitive stakes have a historical dimension. Second, they are graded rather than binary: apart from friendly matches, all contests have stakes; only their level differs[7]. Third, they comprise an objective part (stage of the competition, associated gains, risk of exclusion) and a more subjective, symbolic part, linked to the symbolic attributes of the result (revenge, exceptional character, international dimension), often of historical origin. The instrument presented below does not measure the stakes as an individual perceives them, but a reference level constructed from observable indicators of these two parts.

The relationship between the stakes and competitors' will to win is, moreover, reciprocal: the more numerous the consequences attached to the result, the stronger the desire for victory (Lazear & Rosen, 1981); and the greater the will to triumph, the higher the felt stakes.

Competitive Stakes and Neighboring Concepts

Table 2 distinguishes competitive stakes from the five neighboring concepts. Prestige is one of their dimensions, not a synonym; perceived importance is their individual manifestation; public interest is their expected effect, not a component.

[7] A friendly match has no direct sporting consequence, but it can have a symbolic dimension (prestige, history) or individual consequences (selection, preparation).

Table 2. *Competitive Stakes and Neighboring Concepts*

Concept	Definition adopted	Relationship to competitive stakes
Competitive balance	Closeness of the forces involved; *ex ante* uncertainty of the result	Distinct and independent: two equally balanced contests can differ greatly in their stakes
Competitive intensity	Balance, stakes and reversals, measured over the course of a match or a championship	Stakes are one component, treated indirectly; competitive stakes are measured *ex ante* and independently of the course of play
Prestige	Appeal, rank and rarity of a competition	A (present) dimension of competitive stakes, without being reducible to them
Perceived importance	An individual's subjective judgment of what is at stake	Individual perception of the stakes, varying by type of spectator; subject of validation
Public interest	Attitude and behavior of (TV) spectators: audiences, attendances, willingness to pay	Variable to be explained (expected effect), not to be confused with the stakes

Source: authors.

These relationships can be summarized by the following sequence: the objective characteristics of the contest (history, prestige, consequences) determine a reference level of competitive stakes; this level is perceived differently by different spectators (perceived stakes); and perceived stakes influence public interest.

The link between stakes and interest varies by type of spectator. Three categories can be distinguished: (i) "fans," who attend all the matches, at least at home, of the team they support, are most often season-ticket holders and are strongly attached to the club, and for whom the stakes add extra interest to matches they follow anyway; (ii) occasional spectators, who decide on the basis of personal criteria (availability, ticket prices, weather, security conditions), the stakes being only one factor among others; (iii) enthusiasts of "marquee matches," for whom the stakes are paramount since they are precisely one of the determinants of such matches. This heterogeneity justifies distinguishing the reference level of the stakes from perceived stakes.

The Three Dimensions of Competitive Stakes

The factors that drive competitors to want to "win at all costs" are partly objective and easily perceptible (stage of the competition, associated gains, risk of exclusion), and partly more subjective and linked to the symbolic attributes of the result (revenge, exceptional character, international dimension). The latter may have a historical origin and are correlated with the prestige of competitions. We retain three dimensions, which correspond to the three times of the contest: its past (history), its present (prestige) and its future (consequences of the result).

The History of the Contest (past dimension)

Past elements can increase the importance that players and the people around the clubs attach to the result. They stem from cultural antagonisms inherent in the

history of clubs or players, or from earlier incidents of play (refereeing error, brawl, large margin). Research on rivalry shows that it increases competitors' commitment (Kilduff et al., 2010), that it structures supporters' identity (Berendt & Uhrich, 2016) and that its intensity varies from one contest to another (Tyler & Cobbs, 2015).

Derbies are the clearest form. In its original sense, a derby pits two teams from the same city against each other (Bromberger & Marriottini, 1994), even if the term is often applied to neighboring clubs. Beyond the struggle for local supremacy, these contests often reflect divisions within the urban population: religious (Celtic and Rangers in Glasgow), political (FC Barcelona and Espanyol Barcelona) or social (Juventus and Torino). The "classicos" (Real Madrid–FC Barcelona, then OM–PSG in France) rest on long-standing rivalries that media coverage has amplified. In both cases, history looms large and gives the contest an added symbolic stake.

A second group of contests is characterized by one or more past events of a more factual nature: a player transferred between the two clubs, a refereeing error in a recent match, the need to overturn a heavy defeat in the first leg[8], a recent elimination in another competition, supporter misbehavior, statements by opposing officials. Being more isolated, these events weigh less on participants' perception than deep-rooted antagonisms[9] ; they must be assessed case by case. A third group comprises contests with no particular historical element. There remains the case of the first meeting between two opponents, where no history exists.

The Prestige of the Contest (present dimension)

Prestige here designates the appeal of a competition, its capacity to impress and attract (TV) spectators. It is linked to the stakes: the more a contest is likely to arouse observers' interest, the more eagerly its outcome is awaited. It may stem from the exceptional character of the competition, its international dimension, its rarity or its geographic setting, rarity increasing the perceived value of a good or an event (Lynn, 1991).

We distinguish three categories: (i) national competitions and, by default, those that are only regional, departmental or local; (ii) international competitions held every year (Grand Slam tournaments, European cup finals, the Super Bowl); (iii) "rare" international competitions, with a periodicity of more than one year (World Cups, Olympic Games, Ryder Cup, solo round-the-world race). This hierarchy rests on three observations: competitions in the first category are often qualifying events for those in the other two; the latter therefore bring together the best specialists in the discipline; and they are consequently characterized by a very high level of competition.

Prestige is not the same as the consequences of the result. The prize money of an international final is doubtless higher than that of a national competition, but this is not always the case: in the Ryder Cup, the players representing Europe and the United States derive no immediate sporting advantage from it and are not paid, or only very little compared with other competitions, for taking part.

[8] A situation now often called a "remontada," following FC Barcelona's 6–1 victory in the second leg of its Champions League round-of-16 tie against PSG in 2017.

[9] In some team sports, the multiplication of transfers perhaps qualifies this observation.

The Consequences of the Result (future dimension)

In sport, results indicate what has been won or lost in a "particular undertaking": the match or the competition. The stakes are therefore directly linked to the implications of the result. Decision theory gives losses more weight than equivalent gains (Kahneman & Tversky, 1979), which argues for ranking at the highest level the consequences that threaten continued participation itself. Three types of consequences can be distinguished, in order of increasing implication: (i) sporting consequences limited to the result of the contest (points, place in the standings); (ii) economic consequences, whether direct (revenues associated with certain victories and the symmetrical loss of earnings, broadcasting rights, qualification for other prestigious events, subsidies) or indirect and less automatic (change of strategy, dismissals, transfers, renegotiation of sponsorship contracts, falling attendance); (iii) remaining in the competition or being excluded (elimination, gaining or keeping a place on a circuit) and final victory. In economic theory, random negative consequences are associated with the notion of risk (Beucher et al., 2004; Longaretti, 2020), and a probabilizable future is contrasted with one that is not (Passaga & Salin, 2021). In the sporting domain, the relevant distinction is rather that between consequences that are certain (automatic) and merely possible.

The third category has the highest stakes. In golf, the "card" qualifying event is the archetype: at the end of several days of play, a made or missed putt can open or close access to the DP World Tour. Contests offering no chance to "catch up" are thus those where the stakes are highest; they rise as the end of competitions approaches (final stages, end of season) and depend on competition design (Szymanski, 2003), knockout formats pushing them upward. A generalization of these formats is nevertheless hard to envisage, notably because of the loss of earnings it would represent for certain stakeholders[10].

Research Propositions

The foregoing framework allows us to state four research propositions, which specify the place of competitive stakes among the determinants of public interest:

P1. All else being equal, public interest (audiences, attendances) increases with the level of competitive stakes.

P2. Competitive stakes moderate the effect of outcome uncertainty: for a given level of uncertainty, a low-stakes contest generates less interest than a high-stakes one, and the effect of uncertainty on interest is weaker the lower the stakes.

P3. The effect of the stakes on interest is heterogeneous across types of spectators: it decreases from enthusiasts of "marquee matches" to season-ticket-holding fans, whose attendance is less conditioned by the stakes, with occasional spectators occupying an intermediate position.

P4 (exploratory). The historical dimension of the stakes is associated with a higher frequency of incidents (deviant behavior by players or supporters).

[10]The evolution of the format of many competitions in fact reflects the opposite choice.

These propositions are not tested in the present article; Section 6.4 indicates how to do so.

Methodology: Building a Measurement Instrument

Approach

We construct an exploratory instrument of the composite-index type, following the usual steps of this kind of approach (OECD & JRC, 2008; Greco et al., 2019): conceptual framework (Section 3), choice of variables and scales, aggregation rule, justification of the weighting and robustness analysis (Section 5.3). The construction logic is that of the double-entry tables used in economics and sociology (overall economic table, input–output tables, mobility tables): determine what appears in rows and columns, then cross the information. Here, the three temporal dimensions of the stakes are crossed with their levels, and the possible configurations of these dimensions are ordered.

Variables and Coding Rules

Three ordinal variables are coded from 0 to 3: HIS (history, past dimension), PRE (prestige, present dimension) and CON (consequences of the result, future dimension). Level 0 means that the dimension is absent (first meeting, regional or local competition, friendly match). Table 3 specifies the coding rule for each level, the information to look for and its sources. Within a dimension, the highest applicable level is retained: levels do not accumulate.

Table 3. *Coding Rules for the Three Dimensions*

Variable	Level	Coding rule	Information and sources	Example
HIS – History of the contest (past)				
HIS	0	No prior meeting between the opponents (first contest)	History of meetings: results databases, specialized press	First meeting between two players
HIS	1	Prior meetings, with no particular element noted	Same.	Two clubs with no dispute
HIS	2	At least one recent factual element (by convention, within the last two seasons) likely to increase the importance of the result: transfer between the two clubs, refereeing dispute, incident, elimination of one by the other, heavy defeat to be erased	Specialized press, reports of recent matches	Transfer of a player between the two clubs
HIS	3	Structural historical antagonism: derby in the strict sense (same city) or long-standing rivalry recognized as such by at least two independent sources (“classico”)	Press, specialized books and websites	OM–PSG; Chalon BC–Élan Chalon

Variable	Level	Coding rule	Information and sources	Example
PRE – Prestige of the competition (present)				
PRE	0	Regional, departmental or local competition	Official rules and calendar of the competition	Regional championship
PRE	1	National competition (championship, cup), regardless of the country in which it takes place	Same	French championship; NBA
PRE	2	International competition held every year	Same	Miami Open; badminton Masters
PRE	3	International competition with a periodicity of more than one year	Same	World Cup; Olympic Games; Ryder Cup
CON – Consequences of the result (future)				
CON	0	No sporting or economic consequence (friendly match)	Nature of the match (scheduling, rules)	Friendly match
CON	1	Sporting consequences limited to the result of the contest (points, place in the standings), with no direct and immediate effect on continuation in the competition; economic effects only diffuse, via the final standings	Competition format, standings, press	Regular league match
CON	2	Direct economic consequence (bonus, prize money, revenue contingent on the result) or indirect (possible) consequence clearly identified and attached to the result of this contest	Financial regulations, economics and sports press	Match whose result earns a bonus
CON	3	The result directly determines continuation in or exclusion from the competition (knockout, play-off), retention or promotion, or award of the title	Competition format, bracket, rules	Final; knockout match

Note: HIS, PRE and CON denote history, prestige and consequences respectively. The time windows (two seasons) and the two-source threshold are working conventions, to be tested during validation.

Aggregation Rule

The level of competitive stakes, denoted S and expressed in points, is calculated as follows:

$$S = m(k) \times (HIS + PRE + CON)$$

where HIS, PRE and CON are the levels (0 to 3) of the three dimensions and m(k) is a coefficient that depends on the configuration k of the contest, that is, on the set of dimensions present (level above 0). Seven configurations are possible, denoted a to g (Table 4).

Table 4. *The Seven Possible Configurations and their Coefficients*

Configuration	HIS	PRE	CON	Type of contest	Coefficient m	Combinations	Range of S
a	✓	✓	✓	All three dimensions are present	7	27	21 – 63
b	–	✓	✓	First contest, with prestige and consequences	6	9	12 – 36
c	✓	–	✓	Regional contest, with history and consequences	5	9	10 – 30
d	✓	✓	–	Friendly contest, with history and prestige	4	9	8 – 24
e	–	–	✓	First regional contest, with consequences	3	3	3 – 9
f	–	✓	–	First friendly contest, with prestige	2	3	2 – 6
g	✓	–	–	Regional friendly contest, with history	1	3	1 – 3

Note: ✓ = dimension present (level 1 to 3); – = dimension absent (level 0). The 63 combinations break down as 27 + 9 + 9 + 9 + 3 + 3 + 3.

For example, the OM–PSG "classico" falls under configuration a (HIS = 3, PRE = 1, CON = 1): $S = 7 \times (3 + 1 + 1) = 35$. The minimum value (1) corresponds to a regional friendly contest between two teams that have already met, with no particular element; the maximum value (63) to a contest whose three dimensions are all at the maximum level, for example a World Cup final between two long-standing rivals[11].

The 63 possible combinations produce only 24 distinct values of S: seven different profiles lead, for example, to 42 points (the permutations of 1-2-3 and the 2-2-2 profile in configuration a). Two contests with the same score can therefore have different profiles. This is why the profile (HIS, PRE, CON) and the configuration must always be reported together with the score.

Justification of the weighting

The weighting rests on three structural assumptions.

H1 (accumulation). The stakes increase with the number of dimensions present. Each dimension feeds a distinct source of motivation and attention: rivalry for the past (Kilduff et al., 2010; Tyler & Cobbs, 2015), the status and rarity of the event for the present (Lynn, 1991), future gains and losses for the future (Lazear & Rosen, 1981; Kahneman & Tversky, 1979). Their simultaneous presence reinforces them mutually.

H2 (maximum). The stakes are at their maximum when all three dimensions are present at their highest level.

[11] The 1974 football World Cup final illustrates this possibility.

H3 (hierarchy). Future consequences take precedence over the present context, which itself takes precedence over the past. Three arguments support this: (i) consequences are the only ones that are both irreversible and directly attached to the result of this contest, whereas history and prestige only modulate its meaning; (ii) the literature traditionally equates the stakes with future consequences (Jennett, 1984; Kringstad & Gerrard, 2004); (iii) losses weigh more than gains (Kahneman & Tversky, 1979). Prestige is valued more than historical elements because it concerns all participants and audiences, whereas history is of importance mainly to clubs and their supporters.

These arguments are theoretical justifications, not demonstrations. H3 is a working hypothesis rather than an established property: a historic derby may, for supporters, weigh more than a league match with limited sporting consequences. No data make it possible to settle the question at this stage; Section 5.3 measures the effect of this assumption on the results.

Numerical translation. Assumptions H1 to H3 determine the order of the seven configurations: three-dimension configurations (a) take precedence over two-dimension ones (b, c, d), which in turn rank above single-dimension ones (e, f, g) (H1); for an equal number of dimensions, H3 puts at the top the configurations that include the highest-priority dimensions (b > c > d; e > f > g). The coefficients m(k) = 7, 6, …, 1 assign these ordinal ranks and are used as multipliers with a constant step. By contrast, within a configuration, the levels of HIS, PRE and CON are added with equal weight: H3 therefore plays no part in the relative weight of the dimensions within a given configuration.

These are conventions of simplicity, common in composite indices, whose consequences are examined through a sensitivity analysis (Saisana et al., 2005). They do, however, mix ordinal levels with cardinal operations, which limits the interpretation of point differences: S should be read as a ranking of contests rather than as an interval measure.

Application Protocol

Objectives. The application pursues three goals, linked to RQ3: to verify that the coding is workable from public information; to observe whether S distinguishes contests of different levels; and to measure the sensitivity of S to the weighting assumptions. It aims neither to validate the instrument nor to establish possible generalization.

Sample. We assembled a purposive (non-probability) sample of twenty contests played on March 31, 2024, with maximum variation along four criteria: geographic level (five contests per zone: Bourgogne–Franche-Comté, France, Europe, world); type of sport (team or individual: football (soccer), rugby, basketball, volleyball, handball, ice hockey, baseball, tennis, badminton, judo, table tennis, boxing); format (league match, final, friendly match); and the gender and age of competitors (two women's contests and one youth contest). The choice of date reflects the fact that this Sunday is traditionally a day on which many competitions take place, and that late March is a period when league rounds are played in almost all sports, along with

many international competitions. A single date also neutralizes the calendar effect. For regional contests, selection was guided by the possibility of obtaining from the regional press all the information needed for coding; for the others, the information comes from specialized sports news sites. We are aware that this selection method introduces biases discussed in the section.

Data collection and coding. For each contest, the information was recorded on a standardized sheet (HIS, PRE, CON and sources) and coded according to Table 3.

Sensitivity analysis. We compare S with six alternative specifications (Table 6) using Spearman's rank correlation coefficient (ρ), Kendall's τ-b and the maximum rank shift. Three Monte Carlo simulations (10,000 draws) complete the analysis by randomly varying either the weights of the dimensions or the configuration coefficients.

Illustrative Application and Sensitivity Analysis

Coding of the Twenty Contests

Table 5 presents the profile of each contest (HIS, PRE, CON), its configuration and its level of competitive stakes S, calculated according to the rule in Section 4.3.

Table 5. *Coding and Level of Competitive Stakes of Twenty Sporting Contests played on March 31, 2024*

Sport	Competition	Contest	HIS	PRE	CON	Cfg.	S (points)
Bourgogne–Franche-Comté (regional zone)							
Volleyball	Nationale 2	Sennecey / Besançon	2	1	1	a	28
Football (U18)	U18 – D2 – GA	TMF / Bois du Verne	1	0	1	c	10
Basketball (W)	Women's Prénationale	Chalon BC / Élan Chalon	3	0	1	c	20
Football	Régional 3, Group B	Le Breuil / Decize B	1	0	1	c	10
Tennis	Friendly match	Gueugnon / Dijon	2	0	0	g	2
France (national zone)							
Football	French championship	OM / PSG	3	1	1	a	35
Rugby	French championship	Bayonne / Toulon	2	1	1	a	28
Basketball	French championship	Paris / Nanterre	2	1	1	a	28
Football (W)	Women's French championship	Paris / Dijon	1	1	1	a	21
Volleyball	Men's Élite	Arles / Chalon	1	1	1	a	21
Europe (continental zone)							
Football	English championship	Manchester City / Arsenal	2	1	1	a	28
Ice hockey	Swiss championship	Lausanne / Davos	1	1	1	a	21
Handball	German championship	Lemgo / Kiel	1	1	1	a	21
Badminton	Spain Masters	Final: Loh Kean Yew / Junior Popov	1	2	3	a	42

Sport	Competition	Contest	HIS	PRE	CON	Cfg.	S (points)
Judo	Antalya Grand Slam	+100 kg final: Riner / Sato	1	2	3	a	42
World (international zone)							
Tennis	Miami Open	Final: Dimitrov / Sinner	1	2	3	a	42
Basketball	NBA, regular season	San Antonio / Golden State	1	1	1	a	21
Baseball	MLB, regular season	Seattle Mariners / Boston Red Sox	2	1	1	a	28
Table tennis	WTT Champions Incheon	Final: Calderano / Liang	1	2	3	a	42
Boxing	WBA cruiserweight belt	Goulamirian / Ramirez	1	2	3	a	42

Note: unless otherwise stated, these are men's competitions; (W) = women's; (U18) = players under 18. HIS = history, PRE = prestige, CON = consequences (levels 0 to 3, Table 3); Cfg. = configuration (Table 4); S = m × (HIS + PRE + CON). The elements used for the HIS = 2 and HIS = 3 codings are given in Appendix A. Source: regional press and specialized sports news sites; author's coding.

Reading the Results

By way of example, the OM–PSG "classico" falls under configuration a and obtains 35 points: heightened rivalry between two historically dominant clubs in France (HIS = 3), national competition (PRE = 1), sporting consequences limited to the result (CON = 1), with PSG dominating the league by a wide margin a few rounds before the end.

The observed levels of stakes range from 2 to 42 points (mean 26.6; median 28; standard deviation 11.7). Three groups stand out: four regional or friendly contests (2 to 20 points); eleven league or regular season matches (21 to 35 points, depending on history); five annual international finals (42 points, all with the same 1-2-3 profile). For equal history, a final is thus worth twice a regular league match (42 versus 21).

These results should be read with three precautions. First, the sample covers only three of the seven configurations (a: 16 contests; c: 3; g: 1); no contest reaches CON = 2 or PRE = 3, and none is a first meeting (HIS = 0). The application therefore says nothing about the instrument's behavior in configurations b, d, e and f, nor at the high end of the scale. The absence of CON = 2 may be due to the date of observation.

Second, gender and age are not specifically considered: the equality of S between the French women's football championship (Paris / Dijon, 21 points) and men's championships with the same profile is therefore a consequence of the construction, not an empirical result. The sample (two women's contests, one youth contest, all three tied to a regional or national level) allows no inference about the effect of gender or age on perceived stakes or on public interest; these are separate questions, to be tested.

Finally, a CON = 1 level covers very different situations in terms of their real importance. The Manchester City–Arsenal contest, which pitted two of the three title contenders against each other, thus receives the same CON as the OM–PSG match, played when the championship seemed decided: the instrument codes the nature of the consequences, not the probability that the result triggers them.

Sensitivity Analysis

Table 6 compares the ranking of the twenty contests according to S with that obtained under alternative weighting specifications.

Table 6. *Sensitivity of the Ranking of the Twenty Contests to Weighting Assumptions*

Specification	Description	Spearman's ρ	Kendall's τ-b	Maximum rank shift
S1	m = number of dimensions present (3, 2, 1): without the H3 hierarchy among configurations with the same number of dimensions	1.00	1.00	0
S2	Simple sum HIS + PRE + CON, with no configuration coefficient	0.95	0.91	7.5
S3	Weighted sum 1 × HIS + 2 × PRE + 3 × CON (H3 applied to the dimensions)	0.99	0.98	2.5
S4	Weighted sum 3 × HIS + 2 × PRE + 1 × CON (reversed hierarchy)	0.82	0.75	12.5
S5	Reversed order of the configuration coefficients (m = 7, 4, 5, 6, 1, 2, 3 for a to g)	1.00	1.00	0
S6	Product (1 + HIS) × (1 + PRE) × (1 + CON)	0.99	0.98	2.5
MC1	Weights of HIS, PRE, CON drawn from a uniform Dirichlet distribution; weighted sum with no configuration coefficient	median 0.95; P5 = 0.36	–	–
MC2	Same, multiplied by the coefficients m(k) of S	median 1.00; P5 = 0.61	–	–
MC3	Configuration coefficients drawn at random respecting H1 only; levels summed with equal weight	median 1.00; P5 = 0.98	–	–

Note: correlations are computed between S and the alternative specification across the twenty contests (average ranks in case of ties). MC1 to MC3: 10,000 draws; P5 = 5th percentile of the distribution of simulated correlations.

Three lessons emerge. First, the ranking is strictly identical when the configuration coefficients are modified (S1, S5, MC3). This result is, however, mechanical: only three configurations are observed (a, c, g) and their relative order is the same in these specifications. It says nothing about the soundness of the coefficients assigned to the configurations absent from the sample.

Second, the ranking depends mainly on two elements: the value of CON (which isolates the finals) and the contrast between regional contests on the one hand and national and international ones on the other, carried by the configuration coefficients. When these coefficients are removed (S2), the correlation remains high (0.95) but some contests move by more than seven ranks.

Third, the ranking is sensitive to the assumed hierarchy among the dimensions. Applied to the dimensions (S3), H3 changes the result little (ρ = 0.99). Reversed (S4), it lowers the correlation to 0.82 and moves some contests by twelve ranks: matches with strong history (OM–PSG, Chalon BC–Élan Chalon) then overtake or equal the international finals, and a regional friendly match with a level 2 history (Gueugnon / Dijon) obtains the same score as a national league match. When the weights of the dimensions vary randomly with no configuration coefficient (MC1),

the correlation with S falls below 0.36 in 5% of cases. Assumption H3 is therefore not neutral.

What the Application Shows and does not Show

The application shows that the coding is workable from public information for a variety of sports, levels and formats, that S distinguishes groups of contests of different levels, and that its ranking depends measurably on the weighting assumptions. It does not prove the reliability of the coding, the validity of the instrument (no comparison with external indicators of public interest), the relevance of the weightings, or the transposability to all disciplines. Moreover, it authorizes no conclusion about gender, age or spectators' interest.

Discussion, Implications and Limitations

Theoretical Contributions

This article makes three theoretical contributions.

It clarifies a construct. By defining competitive stakes and distinguishing them from competitive balance, competitive intensity, prestige, perceived importance and public interest (Table 2), it meets the requirement of conceptual clarity (Suddaby, 2010) and removes a frequent confusion among the stakes, their determinants and their supposed effects.

It broadens the conception of the stakes. Existing approaches (match-importance indicators, competitive intensity) equate them with future consequences for the standings. In our view, they comprise three temporal dimensions, two of which – history and prestige – escape these approaches, whereas the literature on rivalry and rarity identifies them as sources of motivation and attention (Kilduff et al., 2010; Lynn, 1991).

It situates the stake among the determinants of interest in sporting contests. As an *ex-ante* determinant, competitive stakes complement competitive balance (outcome probabilities) and competitive intensity (course of play). They can moderate the effect of outcome uncertainty (P2). Propositions P1 to P4 thus open a testable research program (Section 6.4), where the literature had been content to note that the stakes "matter."

On the methodological side, the article proposes a measurement framework whose coding rules, weighting assumptions and sensitivity to assumptions are explicit and therefore open to discussion.

Managerial Implications

The stakes do not have the same meaning for all stakeholders (Table 7). Organizers, broadcasters and sponsors see in them a source of attractiveness. Athletes bear the psychological, financial and career consequences: pressure can degrade performance (Baumeister, 1984; Dohmen, 2008; Apesteguia & Palacios-Huerta,

2010), and an elimination or a poor performance in a highly exposed contest can affect their value on the transfer market, their bonuses or the renewal of their contract. Supporters associate an identity with them. These interests can diverge: the strong appeal of a contest can increase the pressure on athletes. A high level of stakes is therefore not "better" in itself; it must be read differently depending on the actors.

Table 7. *Possible Uses of the Level of Competitive Stakes by Stakeholder*

Stakeholder	Possible use	Conditions and precautions
Organizers and leagues	Schedule high-S marquee matches in the most lucrative slots; identify, over a season, the dimension (HIS, PRE or CON) that is missing from the calendar; design formats (final stages, play-offs) that raise CON at the end of the season	Knockout formats reduce the revenues of certain stakeholders and increase the burden on athletes; a rivalry (HIS) can be cultivated but not decreed
Professional clubs	Categorize matches for ticketing; use high-S contests as "showcases" to promote their young talents	Relationship between S and attendance to be tested before any pricing use (P1)
Broadcasters	Select marquee matches; introduce S as an explanatory variable in audience forecasting models	Prior validation of P1 and of the reliability of the coding
Sponsors	Choose properties with high potential exposure; build brand value through attendances and audiences	Take into account the risk of deviant behavior associated with high stakes (P4)
Athletes and coaching staff	Anticipate high-S contests in order to organize psychological preparation and media exposure; see in them an opportunity to raise their profile and hence their value	Pressure can degrade performance; career consequences differ by athlete status and level
Public authorities and organizers (security)	Complete risk-assessment grids to calibrate security arrangements	To be considered only after P4 has been tested; avoid stigmatizing certain groups of spectators
Betting operators and regulators	Anticipate betting volumes; target monitoring of competition integrity	Do not encourage excessive gambling; S does not measure the asymmetry of stakes between opponents

These uses are conditional. We recommend introducing them in stages. From now on, S and the profile (HIS, PRE, CON) can be used as a *descriptive* grid for a calendar, and as a grid for identifying contests that put athletes under heavy pressure. Later, thanks to further work, S could be integrated into audience and/or attendance forecasting models and into the pricing categorization of matches.

Limitations

Seven limitations should be emphasized.

- Unvalidated instrument. Twenty contests played on a single day illustrate the application of the instrument but establish neither its reliability nor its validity.
- Weighting. H1 to H3 are theoretical assumptions. The configuration coefficients are ranks used as multipliers, and 63 combinations produce only 24 values of S: S reads as a ranking, and the profile must be published with the score.
- Nature, not intensity, of consequences. CON codes the type of consequence and not the probability that the result triggers it (see Manchester City–Arsenal, Section 5.2). The stage of the competition and the weight of each match in the season (82 matches in the NBA, about thirty rounds in a football league, a single match in a final) are not normalized: comparability across sports is not established. Reversals during play are deliberately excluded.
- Coding. HIS requires good knowledge of the sport observed, except for derbies, whose definition is precise; the boundary between CON = 1 and CON = 2 is delicate (level 2 is, for example, never observed in the sample).
- Scope. The instrument applies to contests between two opponents. For competitions with many participants (cycling or motor races, athletics), HIS cannot be defined: only PRE and CON can be coded, which yields only an approximation.
- Sample. It is purposive and limited to one date (a Sunday at the end of the season), one region (the author's) and contests well documented in the press. Only three configurations out of seven are observed; HIS = 0, PRE = 3 and CON = 2 are never observed.
- Reference level and perceived stakes. The instrument provides a common reference level; it measures neither the stakes perceived by each type of spectator nor the stakes as experienced by the various stakeholders.

Research Avenues and Validation Program

Future research on this question could generate new knowledge. Six "avenues," from reliability to extension of the instrument, could be envisaged.

1. Reliability. Independent double coding, by at least two coders, of a stratified sample of contests (several dates, seasons, sports and levels, for example 200 contests); computation of a weighted kappa per dimension (Cohen, 1968), interpreted following Landis and Koch (1977); revision of the coding rules in light of disagreements.
2. Content validity. Evaluation of the dimensions, levels and order of configurations by a panel of experts (coaches, journalists, executives), using a Delphi-type procedure.
3. Calibration of weightings. Estimation of the weights of HIS, PRE and CON from demand data (audiences, attendances) in models controlling for

competitive balance, team quality, price and calendar, followed by comparison with the weights imposed here; a survey of spectators, by type of spectator, combining a perceived-stakes scale and a choice experiment.

4. Convergent and predictive validity**.** Correlation of S with audiences, attendances, ticket prices and media coverage; out-of-sample predictive power; testing of propositions P1 to P3, in particular the moderating effect of the stakes on outcome uncertainty (P2).
5. Stakes and incidents. Testing P4 by linking S, and above all HIS, to incidents recorded around contests.
6. Extensions. Adding a probabilistic dimension (variation in the probability of reaching the consequences depending on the result), adapting to sports with many participants, analysis differentiated by gender and age, and comparison across stakeholders.

Conclusion

The stakes of sporting contests are invoked by sports economists but remain poorly defined and rarely measured: the dominant frameworks – competitive balance and competitive intensity – treat them only indirectly. This article defines them as the set of real and symbolic consequences that may flow from the result of a contest in a given context (RQ1), breaks them down into three dimensions – history, prestige, consequences – and codes them according to an explicit protocol leading to a level of competitive stakes from 1 to 63 points (RQ2). Applying it to twenty contests shows that this work can be carried out from public information.

These results are illustrative. They establish neither the reliability nor the validity of the instrument, nor its transposability to all disciplines. The article's contribution therefore lies first in a conceptual clarification and an explicit measurement framework, open to discussion and improvement. If the proposed validation confirmed its value, competitive stakes could then be regarded as a determinant of public interest in sporting contests, on a par with competitive balance and competitive intensity. If it disproved it, this reflection will nonetheless have clarified the interest of the subject. Nevertheless, one thing is certain: competitive balance does not explain everything: at equal uncertainty, a high-stakes contest (derby, final, international match) generally arouses more interest than a friendly match!

References

Adler, M. (2006). Stardom and talent. In V. A. Ginsburgh & D. Throsby (Eds.), *Handbook of the economics of art and culture* (Vol. 1). North-Holland, Elsevier.

Andreff, W. (2009). Équilibre compétitif et contrainte budgétaire dans une ligue de sport professionnel. *Revue économique, 60*(3), 591–633. DOI: https://doi.org/10.3917/reco.603.0591

Andreff, W. (2012). *Mondialisation économique du sport*. De Boeck.

Andreff, W. (2025). *Économie du sport professionnel*. Classiques Garnier.

Andreff, W., & Scelles, N. (2021). Outcome uncertainty fluctuation and match demand: A plea for a competitive intensity metrics. In *A modern guide to sports economics* (pp. 44–56). Edward Elgar. DOI: https://doi.org/10.4337/9781789906530.00008

Apesteguia, J., & Palacios-Huerta, I. (2010). Psychological pressure in competitive environments: Evidence from a randomized natural experiment. *American Economic Review, 100*(5), 2548–2564. DOI: https://doi.org/10.1257/aer.100.5.2548

Artero, I., Bandrés, E., García, J., & Rodríguez, P. (2019). Demand of professional sports: Attendance and audience. *Sports (and) Economics*, 183–218.

Avila-Cano, A., & Triguero-Ruiz, F. (2023). On the control of competitive balance in the major European football leagues. *Managerial and Decision Economics, 44*(2), 1254–1263. DOI: https://doi.org/10.1002/mde.3745

Babington, M., Goerg, S. J., & Kitchens, C. (2020). Do tournaments with superstars encourage or discourage competition? *Journal of Sports Economics, 21*(1), 44–63.

Baumeister, R. F. (1984). Choking under pressure: Self-consciousness and paradoxical effects of incentives on skillful performance. *Journal of Personality and Social Psychology, 46*(3), 610–620. DOI: https://doi.org/10.1037/0022-3514.46.3.610

Berendt, J., & Uhrich, S. (2016). Enemies with benefits: The dual role of rivalry in shaping sport fans' identity. *European Sport Management Quarterly, 16*(5), 613–634. DOI: https://doi.org/10.1080/16184742.2016.1188842

Berri, D. J., & Schmidt, M. B. (2006). On the road with the National Basketball Association's superstar externality. *Journal of Sports Economics, 7*(4), 347–358. DOI: https://doi.org/10.1177/1527002505275094

Beucher, S., Veyret, Y., & Reghezza, M. (2004). *Les risques* [Risks]. Bréal. DOI: https://doi.org/10.4000/books.editionscnrs.9124

Biscaia, R., Ramos, R. F., Yoshida, M., & Kim, Y. (2024). Service quality in spectator sports: A review and research agenda. *International Journal of Consumer Studies, 48*(6), e13086. DOI: https://doi.org/10.1111/ijcs.13086

Borland, J. (1987). The demand for Australian rules football. *Economic Record, 63*(182), 220–230. DOI: https://doi.org/10.1111/j.1475-4932.1987.tb00653.x

Bouvet, P. (2020). Universality and singularities of sports shows production. *Athens Journal of Sports, 7*(1), 35–54. DOI: https://doi.org/10.30958/ajspo.7-1-3

Brandes, L., Franck, E., & Nüesch, S. (2008). Local heroes and superstars: An empirical analysis of star attraction in German soccer. *Journal of Sports Economics, 9*(3), 266–286. DOI: https://doi.org/10.1007/978-3-8350-5429-5_3

Bromberger, C., & Marriottini, J.-M. (1994). Le rouge et le noir, un derby turinois. *Actes de la recherche en sciences sociales, 103*, 79–89.

Buraimo, B., Forrest, D., & Simmons, R. (2006). Robust estimates of the impact of broadcasting on match attendance in football. *Lancaster University Management School Working Paper, 4*, 1–26.

Buraimo, B., & Simmons, R. (2009). A tale of two audiences: Spectators, television viewers and outcome uncertainty in Spanish football. *Journal of Economics and Business, 61*(4), 326–338. DOI: https://doi.org/10.1016/j.jeconbus.2008.10.002

Cabaud, B., Scelles, N., François, A., & Morrow, S. (2016). Modeling performances and competitive balance in professional road cycling. In *The economics of professional road cycling* (pp. 257–283). Springer. DOI: https://doi.org/10.1007/978-3-319-22312-4_12

Cairns, J. A. (1987). Evaluating changes in league structure: The reorganization of the Scottish Football League. *Applied Economics, 19*, 259–275. DOI: https://doi.org/10.1080/00036848700000101

Carreras, M., & Garcia, J. (2018). TV rights, financial inequality, and competitive balance in European football: Evidence from the English Premier League and the Spanish

LaLiga. *International Journal of Sport Finance, 13*(3), 201–224. DOI: https://doi.org/10.1177/155862351801300301

Chen, C. Y., Lin, Y. H., & Chiu, H. T. (2013). Development and psychometric evaluation of sport stadium atmosphere scale in spectator sport events. *European Sport Management Quarterly, 13*(2), 200–215. DOI: https://doi.org/10.1080/16184742.2012.759602

Chmait, N., Westerbeek, H., Eime, R., Robertson, S., Sellitto, C., & Reid, M. (2020). Tennis superstars: The relationship between star status and demand for tickets. *Sport Management Review, 23*(2), 330–347. DOI: https://doi.org/10.1016/j.smr.2019.03.006

Coates, D., & Humphreys, B. R. (2010). Week to week attendance and competitive balance in the National Football League. *International Journal of Sport Finance, 5*, 239–252. DOI: https://doi.org/10.1177/155862351000500401

Cohen, J. (1968). Weighted kappa: Nominal scale agreement with provision for scaled disagreement or partial credit. *Psychological Bulletin, 70*(4), 213–220. DOI: https://doi.org/10.1037/h0026256

de Saá Guerra, Y., González, J. M., Montesdeoca, S. S., Ruiz, D. R., García-Rodríguez, A., & García-Manso, J. M. (2012). A model for competitiveness level analysis in sports competitions: Application to basketball. *Physica A: Statistical Mechanics and its Applications, 391*(10), 2997–3004. DOI: https://doi.org/10.1016/j.physa.2012.01.014

Dermit-Richard, N. (2012). Football professionnel en Europe : un modèle original de régulation financière sectorielle. *Management & Avenir, 57*(7), 79–95. DOI: https://doi.org/10.3917/mav.057.0079

Di Domizio, M. (2010). *Competitive balance and TV audience: An empirical analysis on the Italian Serie A* (Working Paper No. 64). University of Teramo.

Dohmen, T. J. (2008). Do professionals choke under pressure? *Journal of Economic Behavior & Organization, 65*(3–4), 636–653.

Doria, M., & Nalebuff, B. (2021). Measuring competitive balance in sports. *Journal of Quantitative Analysis in Sports, 17*(1), 29–46. DOI: https://doi.org/10.1515/jqas-2020-0006

Evans, R. (2014). A review of measures of competitive balance in the "analysis of competitive balance" literature.

Flores, R., Forrest, D., & Tena, J. D. (2010). Impact on competitive balance from allowing foreign players in a sports league: Evidence from European soccer. *Kyklos, 63*(4), 546–557. DOI: https://doi.org/10.1111/j.1467-6435.2010.00487.x

Forrest, D., Simmons, R., & Buraimo, B. (2005). Outcome uncertainty and the couch potato audience. *Scottish Journal of Political Economy, 52*(4), 641–661. DOI: https://doi.org/10.1111/j.1467-9485.2005.00360.x

Fort, R., & Maxcy, J. (2003). Competitive balance in sports leagues: An introduction. *Journal of Sports Economics, 4*(2), 154–160. DOI: https://doi.org/10.1177/1527002503004002005

Garcia-del-Barrio, P., & Rossi, G. (2020). How the UEFA Financial Fair Play regulations affect football clubs' priorities and leagues' competitive balance? *European Journal of Government and Economics, 9*(2), 119–142.

Greco, S., Ishizaka, A., Tasiou, M., & Torrisi, G. (2019). On the methodological framework of composite indices: A review of the issues of weighting, aggregation, and robustness. *Social Indicators Research, 141*(1), 61–94. DOI: https://doi.org/10.1007/s11205-017-1832-9

Grimshaw, S. D., & Larson, M. (2021). Effect of star power on NBA all-star game TV audience. *Journal of Sports Economics*, *22*(2), 139-163. DOI: https://doi.org/10.1177/1527002520959127

Groot, L. (2008). *Economics, uncertainty and European football: Trends in competitive balance*. Edward Elgar.

Guironnet, J.-P. (2023). Competitive intensity and industry performance of professional sports. *Economic Modelling, 126*, 106441. DOI: https://doi.org/10.1016/j.econmod.2023.106441

Hausman, J. A., & Leonard, G. K. (1997). Superstars in the National Basketball Association: Economic value and policy. *Journal of Labor Economics, 15*(4), 586–624. DOI: https://doi.org/10.1086/209839

Hoegele, D., Schmidt, S. L., & Torgler, B. (2014). Superstars as drivers of organizational identification: Empirical findings from professional soccer. *Psychology & Marketing, 31*(9), 736–757. DOI: https://doi.org/10.1002/mar.20731

Jennett, N. (1984). Attendances, uncertainty of outcome and policy in Scottish league football. *Scottish Journal of Political Economy, 31*(2). DOI: https://doi.org/10.1111/j.1467-9485.1984.tb00472.x

Jones, J. C. H. (1969). The economics of the National Hockey League. *Canadian Journal of Economics, 2*(1). DOI: https://doi.org/10.2307/133568

Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica, 47*(2), 263–291. DOI: https://doi.org/10.1017/cbo9780511803475.003

Késenne, S. (2000). Revenue sharing and competitive balance in professional team sports. *Journal of Sports Economics, 1*(1), 56–65. DOI: https://doi.org/10.1177/152700250000100105

Kilduff, G. J., Elfenbein, H. A., & Staw, B. M. (2010). The psychology of rivalry: A relationally dependent analysis of competition. *Academy of Management Journal, 53*(5), 943–969. DOI: https://doi.org/10.5465/amj.2010.54533171

Kilduff, G. J., Galinsky, A. D., Gallo, E., & Reade, J. J. (2016). Whatever it takes to win: Rivalry increases unethical behavior. *Academy of Management Journal, 59*(5), 1508–1534. DOI: https://doi.org/10.5465/amj.2014.0545

Kringstad, M., & Gerrard, B. (2004). The concept of competitive balance and uncertainty of outcome. *International Association of Sports Economists Conference Paper*, 0412.

Kringstad, M., & Gerrard, B. (2007). Beyond competitive balance. In M. Parent & T. Slack (Eds.), *International perspectives on the management of sport* (pp. 149–172). Elsevier. DOI: https://doi.org/10.1016/b978-0-7506-8237-4.50014-5

Kuethe, T. H., & Motamed, M. (2010). Returns to stardom: Evidence from U.S. Major League Soccer. *Journal of Sports Economics, 11*(5), 567–579.

Landis, J. R., & Koch, G. G. (1977). The measurement of observer agreement for categorical data. *Biometrics, 33*(1), 159–174. DOI: https://doi.org/10.2307/2529310

Lazear, E. P., & Rosen, S. (1981). Rank-order tournaments as optimum labor contracts. *Journal of Political Economy, 89*(5), 841–864. DOI: https://doi.org/10.3386/w0401

Longaretti, P.-Y. (2020). Risques systémiques globaux et risques d'effondrement : Quels éléments d'analyse scientifique, pour quels types de risques ? *LIREC Lettre d'Information sur les Risques et Crises*, 1–6.

Lucifora, C., & Simmons, R. (2003). Superstar effects in sport: Evidence from Italian soccer. *Journal of Sports Economics, 4*(1), 35–55.

Lynn, M. (1991). Scarcity effects on value: A quantitative review of the commodity theory literature. *Psychology & Marketing, 8*(1), 43–57. DOI: https://doi.org/10.1002/mar.4220080105

Madden, P. (2012). Fan welfare maximization as a club objective in a professional sports league. *European Economic Review, 56*(3), 560–578. DOI: https://doi.org/10.1016/j.euroecorev.2011.12.006

Mangeloja, E., & Szeróvay, M. (2024). Does competitive balance explain stadium attendance? Evidence from Finnish men's football. *Soccer & Society*, 1–14. DOI: https://doi.org/10.1080/14660970.2024.2305139

Mehrabian, A., & Russell, J. A. (1974). *An approach to environmental psychology*. MIT Press.

Meissner, L., Rai, A., & Rotthoff, K. W. (2021). The superstar effect in gymnastics. *Applied Economics, 53*(24), 2791–2798. DOI: https://doi.org/10.1080/00036846.2020.1869170

Meletakos, P., Chatzicharistos, D., Apostolidis, N., Manasis, V., & Bayios, I. (2016). Foreign players and competitive balance in Greek basketball and handball championships. *Sport Management Review, 19*(4), 391–401. DOI: https://doi.org/10.1016/j.smr.2015.09.002

Neale, W. C. (1964). The peculiar economics of professional sports. *The Quarterly Journal of Economics, 78*(1), 1–14.

OECD & Joint Research Centre. (2008). *Handbook on constructing composite indicators: Methodology and user guide*. OECD Publishing. DOI: https://doi.org/10.1787/9789264043466-en

Owen, P. D., & King, N. (2015). Competitive balance measures in sports leagues: The effects of variation in season length. *Economic Inquiry, 53*(1), 731–744. DOI: https://doi.org/10.1111/ecin.12102

Passaga, É., & Salin, M. (2021). Risque, incertitude et anticipations en économie. *Regards croisés sur l'économie, 29*(2), 164–172. DOI: https://doi.org/10.3917/rce.029.0164

Pawlowski, T., & Budzinski, O. (2013). The monetary value of competitive balance for sport consumers: A stated preference approach to European professional football. *International Journal of Sport Finance, 8*(2), 112–123. DOI: https://doi.org/10.1177/155862351300800202

Plumley, D., Ramchandani, G. M., & Wilson, R. (2019). The unintended consequence of Financial Fair Play: An examination of competitive balance across five European football leagues. *Sport, Business and Management, 9*(2), 118–133.

Ramchandani, G., Plumley, D., Davis, A., & Wilson, R. (2023). A review of competitive balance in European football leagues before and after Financial Fair Play regulations. *Sustainability, 15*(5), 4284. DOI: https://doi.org/10.3390/su15054284

Rodríguez-Gutiérrez, C., & Fernández-Blanco, V. (2017). Continuous TV demand in road cycling: The 2015 Vuelta a España. *European Sport Management Quarterly, 17*(3), 349–369. DOI: https://doi.org/10.1080/16184742.2016.1238498

Rosen, S. (1981). The economics of superstars. *American Economic Review, 71*(5), 845–858.

Rottenberg, S. (1956). The baseball players' labor market. *Journal of Political Economy, 64*(3), 242–258. DOI: https://doi.org/10.1086/257790

Rouger, A. (2000). *La régulation des championnats de sports collectifs professionnels: entre équilibre compétitif et équilibre concurrentiel*. Thèse de doctorat. Université de Limoges.

Saisana, M., Saltelli, A., & Tarantola, S. (2005). Uncertainty and sensitivity analysis techniques as tools for the quality assessment of composite indicators. *Journal of the Royal Statistical Society: Series A, 168*(2), 307–323. DOI: https://doi.org/10.1111/j.1467-985x.2005.00350.x

Scelles, N. (2021). Intra-match competitive balance and intensity in UEFA men's national team competitions: The impact of recent changes in formats. *Soccer & Society, 22*(4), 314–326. DOI: https://doi.org/10.1080/14660970.2021.1906532

Scelles, N., & Durand, C. (2010). Optimiser l'intensité compétitive sous contraintes. *Jurisport, 99*, 42–45.

Scelles, N., & Durand, C. (2012). Optimiser l'intensité compétitive intra-championnat ? Le cas de la Ligue 1 de football. *Jurisport, 116*, 41–45.

Scelles, N., Durand, C., Bah, T. S., & Rioult, F. (2011). Intra-match competitive intensity in French football Ligue 1 and rugby Top 14. *International Journal of Sport Management and Marketing, 9*(3–4), 154–169. DOI: https://doi.org/10.1504/ijsmm.2011.041569

Scelles, N., Durand, C., Bonnal, L., Goyeau, D., & Andreff, W. (2013). My team is in contention? Nice, I go to the stadium! Competitive intensity in the French football Ligue 1. *Economics Bulletin, 33*(3), 2365–2378.

Schmidt, M. B., & Berri, D. J. (2001). Competitive balance and attendance: The case of Major League Baseball. *Journal of Sports Economics, 2*(2), 145–167.

Sloane, P. J. (1971). The economics of professional football: The football club as a utility maximiser. *Scottish Journal of Political Economy, 17*(2), 121–146.

Suddaby, R. (2010). Construct clarity in theories of management and organization. *Academy of Management Review, 35*(3), 346–357. DOI: https://doi.org/10.5465/amr.2010.0481

Sung, S. H., Hong, D. S., & Sul, S. Y. (2020). How we can enhance spectator attendance for the sustainable development of sport in the era of uncertainty: A re-examination of competitive balance. *Sustainability, 12*(17), 7086. DOI: https://doi.org/10.3390/su12177086

Szymanski, S. (2003). The economic design of sporting contests. *Journal of Economic Literature, 41*(4), 1137–1187. DOI: https://doi.org/10.1057/9780230274273_1

Szymanski, S. (2012). Economics of league design. In *The Oxford handbook of sports economics* (Vol. 1: *The economics of sports*). Oxford University Press. DOI: https://doi.org/10.1093/oxfordhb/9780195387773.013.0001

Tyler, B. D., & Cobbs, J. B. (2015). Rival conceptions of rivalry: Why some competitions mean more than others. *European Sport Management Quarterly, 15*(2), 227–248. DOI: https://doi.org/10.1080/16184742.2015.1010558

Uhrich, S., & Benkenstein, M. (2010). Sport stadium atmosphere: Formative and reflective indicators for operationalizing the construct. *Journal of Sport Management, 24*(2), 211–237. DOI: https://doi.org/10.1123/jsm.24.2.211

Uhrich, S., & Koenigstorfer, J. (2009). Effects of atmosphere at major sports events: A perspective from environmental psychology. *International Journal of Sports Marketing and Sponsorship, 10*(4), 56–75. DOI: https://doi.org/10.1108/ijsms-10-04-2009-b005

Wagner, F., Preuss, H., & Könecke, T. (2020). Measuring competitive intensity in sports leagues. *Sport, Business and Management, 10*(5), 599–620. DOI: https://doi.org/10.1108/sbm-10-2019-0090

Wagner, F., Schubert, M., Preuss, H., & Könecke, T. (2022). Competitive intensity in differently regulated men's football leagues: Evidence from English Premier League and German Bundesliga. *Sport, Business and Management, 12*(5), 580–597. DOI: https://doi.org/10.1108/sbm-10-2021-0128

Wakefield, K. L., Blodgett, J. G., & Sloan, H. J. (1996). Measurement and management of the sportscape. *Journal of Sport Management, 10*(1), 15–31. DOI: https://doi.org/10.1123/jsm.10.1.15

Yoshida, M., & James, J. D. (2010). Customer satisfaction with game and service experiences: Antecedents and consequences. *Journal of Sport Management, 24*(3), 338–361. DOI: https://doi.org/10.1123/jsm.24.3.338

Zhang, L., Wang, L., & Zhang, Y. (2025). Smart construction and spectator satisfaction in sports venues: The role of flow experience in intelligent design under the National Fitness Initiative. *Buildings, 15*(16), 2855. DOI: https://doi.org/10.3390/buildings15162855

Appendix A. *Elements used for coding history (HIS = 2 or 3)*
Table A1 specifies the elements used for the contests coded HIS = 2 or HIS = 3. All the other contests in Table 5 are coded HIS = 1 (prior meetings with no particular element noted).

Table A1. *Justification of the history coding for contests with HIS = 2 or 3*

Contest	HIS	Element retained	Source
OM / PSG	3	"Classico" of French football: recognized rivalry between two historically dominant clubs	Specialized press
Chalon BC / Élan Chalon	3	Derby: two clubs from the same city	Regional press
Sennecey / Besançon	2	Regional competition	Regional press
Gueugnon / Dijon	2	Regional competition	Regional press
Bayonne / Toulon	2	National competition	Specialized press
Paris / Nanterre	2	National competition	Specialized press
Manchester City / Arsenal	2	National competition	International press
Seattle Mariners / Boston Red Sox	2	National competition	International press