

A Comparative Analysis of Competitive Balance Between a Closed and an Open League in Rugby League

Daniel Read¹ , Aaron C.T. Smith²,
and James Skinner¹

Journal of Sports Economics

2021, Vol. 22(8) 871-892

© The Author(s) 2021



Article reuse guidelines:

sagepub.com/journals-permissions

DOI: 10.1177/15270025211022243

journals.sagepub.com/home/jse



Abstract

League regulators aim for an equitable competition where each team has an equal chance of winning the championship, termed competitive balance. It is generally assumed that closed leagues with stricter labor market regulations should demonstrate better competitive balance than open leagues with promotion and relegation. The aim of this research was to examine the competitive balance between and within seasons in the closed Australian National Rugby League (NRL) and open English Super League using five measures of concentration and dominance. Overall, the closed NRL competition demonstrated superior competitive balance. The practical and theoretical implications of the findings are discussed.

Keywords

uncertainty of outcome, competition regulation, Herfindahl index, rugby league

Introduction

A long-standing observation holds that professional sports clubs operate on a spectrum from profit maximizers to win maximizers, the former prioritizing commercial

¹ Institute for Sport Business, Loughborough University London, London, UK

² Institute for Innovation & Entrepreneurship, Loughborough University London, London, UK

Corresponding Author:

Daniel Read, Institute for Sport Business, Loughborough University London, The Broadcast Centre, Here East, Queen Elizabeth Olympic Park, 3 Lesney Avenue, London E15 2GZ, UK.

Email: d.read3@lboro.ac.uk

returns and the latter preferencing competitive success regardless of financial costs (Fort & Quirk, 2004). Profit maximization has typically been linked to closed league systems where there is no risk of relegation and win maximization has more commonly been associated with open competitions that have no safety net for low-performing teams (Késenne, 2000; Sloane, 1971; Vrooman, 1997). Differences in team ownership models and objectives (e.g., majority private investors vs. member owned) also impact whether teams pursue win or profit maximization and their efficiency in achieving such goals (Rohde & Breuer, 2018). For example, member-owned Australian Football League clubs are considered win maximizers within a closed league (Booth, 2004). More recently, commentators have clustered toward the view that many competitions and teams operate with an objective function in a gray area somewhere in-between profit and win maximization (Fort, 2019; Szymanski, 2010). Sports leagues demonstrate peculiarities with regard to profit and win maximization when compared to other industries due to the presence of cooperation (Neale, 1964). The product (utility) of sport that can be commercialized comes in the form of first, the match-level competition, and second, the league-level competition between two or more teams. Therefore, the production and commercialization of any sporting contest, to differing extents, depends upon cooperation between rivals to produce a high-quality joint product (Rebeggiani, 2016).

The dependence a club experiences on their opponents providing a suitable level of competition to generate interest in the fixture, and therefore, the opportunity for commercialization, is captured by the concept—and measures of—competitive balance (El-Hodiri & Quirk, 1971; Rottenberg, 1956). Competitive balance reflects the distribution of performance ability in a competition, with league operators striving to ensure that a monopoly on success does not form through one team accumulating significantly greater resources and talent than others. By ensuring competitive balance, league operators' efforts to ensure competitive balance rest on the assumption that uncertainty of outcome at a match and a competition level will drive fan interest, which can then be monetized (Soebbing, 2008). It is important to note that evidence for this assumption is equivocal and the impact of competitive balance on attendance is contextual to the type of fan and how balance is conceptualized (Coates et al., 2014).

The sport of rugby league presents a revealing comparative case of competitive balance as the two leading domestic leagues, the Australian National Rugby League (NRL) formed in 1998 and the English Super League (SL) formed in 1996, currently operate closed and open competitions, respectively. SL has previously operated with periods of closed competition having suspended relegation for 7 of the 24 seasons it has been in operation, whereas the NRL has always been regulated under closed conditions. Closed league systems afford regulators greater ability to control competitive balance through mechanisms such as drafts, hard salary caps, and income redistribution (Andreff, 2019; Fort & Quirk, 1995). Yet, neither the competitive balance of the NRL nor SL has been assessed or compared using standardized measures of league points concentration or competitor dominance that

represent competitive balance within and between seasons (Evans, 2014). Therefore, a study of competitor dominance and points concentration of the two leagues is of both practical and theoretical interest given that it yields a direct comparison of the impact of two different regulatory approaches on competitive balance. Accordingly, the aim of this research is to examine the competitive balance between and within seasons in the NRL and SL. In doing so, this study provides comparative evidence for the argument that closed league systems outperform open league systems in terms of competitor dominance and points concentration. In addition to the theoretical implications associated with the links between league structure and competitive balance, the results are instructive to regulators as both leagues have been presented with mounting financial challenges from nonexistent or limited gate revenue due to coronavirus disease 2019 (COVID-19) (Pengilly & Phillips, 2020; Press Association, 2020). As a result, part of both competition's long-term recovery strategy requires ensuring adequate competitive balance between teams.

The next section outlines the concept of competitive balance in greater detail and highlights a selection of previous research exploring the connection with fan attendance and television viewership. Subsequently, contextual details of the NRL and SL's structure and competitive balance are provided before describing the methods used and analyses' findings. Lastly, the implications of the results for theory and practice are discussed accompanied by recommendations to improve competitive balance.

Regulating Competitive Balance

The hypothesis that competitive balance, viewed as the degree of parity in performance between teams in a competition, is positively related to spectator interest has been a central question of sports economics (Pawlowski & Nalbantis, 2019; Rottenberg, 1956). Competitive balance can be defined by the unit of measurement: (1) short-term game uncertainty, (2) mid-term seasonal uncertainty, and (3) long-term inter-seasonal uncertainty (Pawlowski & Nalbantis, 2019). Whether explicit or tacit, and whether premised on outcome uncertainty or evenness of results, most governing leagues chase competitive balance (Plumley et al., 2018a). Accordingly, they presume that financial prosperity will accompany a competition where fans of competing teams consistently have expectations for a legitimate contest and a decent show in terms of performance quality (Macdonald & Booth, 2007). Many leagues have pursued these outcomes via equalization strategies focusing on the labor market or financial regulation (Booth, 2004). Or, in more theoretical terms (Szymanski, 2003), more equitable resource distributions to participating teams encourages more game uncertainty. In turn, uncertainty and suspense motivates interest (Budzinski & Pawloski, 2017).

The first common regulatory option focuses on the labor market wherein player movements and acquisitions can be tightly regulated at one end, or unregulated at the other. The core argument maintains that first, "recruits" should not be free to play with any team they choose, but rather should be directed to teams on the

basis of team “need” or the player’s place of residence. For going on 50 years, commentators have advocated that drafting rules and zoning schemes should be used to allocate players to teams, so that no one team monopolizes the best players (Dabscheck, 1975). As a result, each team has its share of highly skilled players, and has a reasonable chance of defeating an opposing team; however, salary rules to prevent “talent hoarding” such as rookie drafts may prevent players from receiving financial rewards commensurate with their skill level. Contrast this labor market regulation with its absence, where the most attractive talent is secured by the highest salary and/or transfer payment.

Second, league governors have designed processes that redistribute league revenues so that every team has a minimum guaranteed income base. For example, a league can collect revenue and then redistribute it equally amongst the participating teams. Conversely, it can be collected by the competing teams, or even only the home team, and retained without any redistribution. Revenue redistribution aims to ensure that every team can not only secure their fair share of quality staff, coaches, managers, and players, but also retain them by providing competitive salaries (Quirk & Fort, 1992). Revenue redistribution therefore partially alleviates the problem of clubs located in larger or isolated markets having bigger budgets.

In the big four American sport leagues (the National Football League, National Basketball Association, Major League Baseball, and National Hockey League) that use a closed system, the previous regulatory options, designed to create and maintain parity, are deployed through salary caps, free agency, a draft system, collective bargaining agreements between league regulators and players’ unions, and revenue sharing policies. However, the evidence has proven equivocal as to whether these measures have improved competitive balance (e.g., Caporale & Collier, 2015; Fort, 2017; Larsen et al., 2006; Lee, 2010; Szymanski & Késenne, 2004). Competitive balance appears to be no better in football (soccer) competitions under an open system (e.g., Flores et al., 2010; Michie & Oughton, 2004; Plumley et al., 2018a, 2018b; Ramchandani et al., 2018). Australian sports in a closed system have displayed greater competitive balance but are still far from balanced (e.g., Booth, 2005; Lenten et al., 2018; Stewart et al., 2016). Further, an ambiguous relationship can be found concerning the relationship between uncertainty of outcome and match attendance, with varying levels of support evident in different sporting competitions (e.g., Borland & Macdonald, 2003; Buraimo & Simmons, 2008; Mills & Fort, 2014). In contrast, other preference variables have been linked to fan attraction across sporting competitions, such as (1) matches where the home team is likely to win, (2) matches where the outcome influences playoff contention, (3) matches where star players will be competing, and (4) aesthetic features of the competition such as scoring frequency (e.g., Buraimo & Simmons, 2009; Coates & Humphreys, 2012; Coates et al., 2014; Cox, 2018; Pawlowski & Anders, 2012; Schreyer et al., 2017).

In comparison, the relationship between television viewership demand and expectations of outcome uncertainty has received only limited study due to data availability issues. The limited analyses suggest that “neutral” television fans

prefer a competitive and high-scoring match (e.g., Alavy et al., 2010; Dang et al., 2015; Feddersen & Rott, 2011; Paul & Weinbach, 2007). The picture is further complicated by recent studies of season ticket holder attendance, which have shown a linear relationship for higher outcome uncertainty games (Schreyer et al., 2016), but a nonlinear relationship with fan distance from the ground (Schreyer et al., 2018). Evidently, the interaction between competitive balance and fan interest is both contextual and complex, as explored in the following section.

Contextualizing Competitive Balance in Rugby League

The professionalization of rugby league can be traced to the origin of the game on August 29, 1895, when 20 leading rugby union clubs from the North of England formed the “Northern Union” separating themselves from the English Rugby Football Union (RFU; Collins, 2006). The popularity of the rugby union among the working class in the Northern industrial heartlands of England (Yorkshire, Lancashire, and Cumbria) prior to 1895, and the success of teams from these regions against largely middle-class teams from London and South England, presented a threat to the southern-based RFU’s control of the sport (Collins, 2006). Leading up to 1895, the RFU progressively tried to prevent the influence and involvement of working-class individuals in the game of rugby union, a sport that had originated and been developed by the middle and upper classes. Most importantly, the RFU banned the payment of players in 1886, specifically in order to prevent paid working-class players overshadowing amateur middle-class participation (Collins, 2006). The central reason for the formation of the Northern Union in 1895 was to enable clubs to provide “broken-time” payments to players for missing work, who could not be compensated under RFU rules.

As football (soccer) began to challenge the popularity of rugby league in Northern England in the early 1900s due to its simplicity and working-class heritage, the Northern Union changed the rules of rugby league to produce a more entertaining product (i.e., more scoring and less stoppages), creating the distinguishing characteristics that still separate league from union today (Collins, 2006). By 1908, rugby league had been established as a sport in Australia with the establishment of the New South Wales Rugby Football League and nine Sydney-based clubs (McGaughey & Liesch, 2002). For the remainder of the century, rugby league and rugby union would follow different paths based on the class divide that had originally separated them. Rugby league pursued a professional economic model defined by remunerating players throughout the 20th century culminating in the NRL (formed in 1998), and SL (formed in 1996) as the most recent manifestations of professional rugby league in Australia and England, respectively.¹

The formation of the SL was announced in 1995 by the Rugby Football League (RFL) in England, with the financial backing of News Corporation owned by Rupert Murdoch (Falcous, 1998). With the need for modernization and wider

appeal to new fans, the new SL design prioritized commercial success as the competition adopted a summer fixture calendar to avoid competing with other winter sports, and chose teams located in favorable markets to spread the game (Falcous, 1998). Beginning in 1996, the first 12 seasons of the SL operated as an open league. In 2005, the RFL announced a franchise licensing system to begin in 2008, turning the SL into a closed competition (BBC, 2005). However, by 2013, the RFL and SL Clubs had decided to revert back to an open competition with relegation due to return in the 2015 season. To address competitive balance, the inaugural season imposed a salary cap stipulating that only 40% of club income could be spent on players (Hadfield, 1996). The cap was later revised to a £1.8 million total expenditure coming into effect in 2001. The salary cap rules were most recently revised in 2017 stipulating an incremental rise from the limit of £1.825 million to £2.1 million by 2020 (Bower, 2017). The revisions also enabled clubs to employ two designated marquee players whose contribution to the salary cap is £150,000 each, despite earning more. In May 2020, faced with the negative economic consequences posed by COVID-19, the SL clubs unanimously voted to maintain the current cap rather than reduce it (BBC, 2020).

The development of the NRL arose from more fractious conditions as the Australian Rugby League (ARL) competition and Australian Super League (ASL) competition vied for dominance as the foremost competition (Skinner & Edwards, 2007). The arrival of pay-TV in Australia in 1995 intensified a battle for the television broadcasting rights between Foxtel, owned by Rupert Murdoch's News Corporation, and Optus Vision owned by the telecommunications company Optus, Continental Cablevision, and Publishing and Broadcasting Ltd (McGaughey & Liesch, 2002).

Optus Vision initially won the broadcasting rights to the ARL from 1994 to 1999. The popularity of broadcasted ARL matches as well as the emergence of subscription television in 1995 stimulated News Corporation to begin developing the ASL competition formed of 12 privately owned teams (11 from Australia and 1 from New Zealand). In response to News Corporation's efforts to attract players and clubs to the ASL, the ARL and the New South Wales Rugby Football League made clubs sign a loyalty agreement to honor their contracts. In 1995, News Corporation launched a legal challenge that argued the loyalty agreements were anti-competitive measures. The lawsuit was countered by the ARL and New South Wales Rugby Football League arguments that News Corporation's attempts to start the ASL had unlawfully attempted to destroy competition. The original trial in 1995 found in favor of the ARL and New South Wales Rugby Football League, a decision that was reversed on appeal in 1996, leading to the inaugural ASL season in 1997 (McGaughey & Liesch, 2002). Against a backdrop of significant financial losses for both competitions, in December 1997, ASL and ARL announced a merged, closed competition, the NRL. The NRL was to be comprised of 20 teams in 1998, reduced to 17 in 1999, and 14 by 2000. In 1998, the NRL had a salary cap of AUS\$3.25 million, and by 2020 the base salary cap was set at AUS\$9.5 million with varying marquee player limits (NRL, 2020a). The NRL states that the salary cap exists to prevent wealthier clubs hoarding talent

and to improve the financial sustainability of the competition (NRL, 2020a). Unlike the SL, the NRL engages in collective bargaining to guarantee players a minimum wage. Previous research examining competitive balance in ARL indicates that the salary cap introduced in 1985 improved competitive balance within seasons (Booth, 2005), but between-season competitive balance in the NRL has historically been poor (Lenten, 2009). Relevant to the NRL's competitive balance, King et al. (2012) showed that being in contention for the finals² and home team likelihood of success were more important to predicting attendance than uncertainty of outcome between 2004 and 2008.

An inspection of the competition structures of the NRL and the SL reveals that the two leagues developed from different philosophies. The open format and rules of SL remain more closely aligned to a win maximization model, whereas the NRL's closed system is seemingly more aligned with profit maximization (Andreff, 2019). Despite this contrast, both competitions appear to be financially vulnerable. No sport has been immune from the financial ramifications of reduced ticket sales and diminished fixture schedules imposed by COVID-19, but the pandemic has demonstrated rugby league's deeper vulnerability. SL has long been challenged by poor financial management at a club level, low attendances, and an inability to noticeably expand the game out of the Northern English heartlands (Willacy, 2018; Wilson et al., 2015). As a result, multiple SL clubs are close to closure if they continue to lose ticket revenue (Press Association, 2020). The RFL's most recent financial statement reported a small operating profit (£75k) from an approximate turnover of £22 million following 2 years of losses (RFL, 2020). Likewise, although the NRL was able to complete the 2020 season with lowered crowd attendances, the pandemic has again highlighted the financial precarity of the clubs (Pengilly & Phillips, 2020). However, the NRL as a governing body enjoys better financial health to support its clubs. The NRL posted a profit of AUS\$30 million from a total revenue of approximately AUS\$528 million (NRL, 2020b).

The contribution of comparing competitive balance between the NRL and SL is twofold. Firstly, previous studies have only compared competitive balance between open and closed league systems using economic modeling. A comparison of two leading domestic competitions operating under different regulatory structures can provide insight into operationalization of open and closed leagues to further theoretical debate based on observational evidence. Secondly, research from different types of sporting competitions suggests that competitive balance, to some degree, influences competition attractiveness and attendance, but other factors such as competition intensity, superstar presence, and broadcasting quality all matter (Bačik et al., 2019; Jane, 2016; Scelles et al., 2013). Although competitive balance may not be a golden bullet to cultivating fan engagement, it is part of the solution. Therefore, given the increased financial strain placed on both the NRL and SL by COVID-19, it is pertinent to examine the current and historical competitive balance of these leagues as it will function as part of both competitions long-term financial survival plans. The following section details the data collected and measures used to inspect the competitive balance of both competitions.

Methods

Data

To analyze trends in the competitive balance of the NRL and SL, data were obtained on the final league positions for regular competition (i.e., before the finals or playoffs). Accordingly, the dataset had 22 and 24 seasons for the NRL and SL, respectively. Regardless of whether the league was open or closed, both leagues have varied in size due to the addition and removal of franchises to enter new commercial markets as well as promotion and relegation rules. The NRL has varied between 20 teams in 1998 to 14 teams in 2000 and has been contested by 16 teams since 2007. SL has also been contested by a varying number of clubs throughout its existence. The SL comprised 14 teams in 1999, and then from 2010 to 2014 was contested by 12 teams in the remaining 18 seasons. Given the changes in league size, the methods used to analyze competition dominance and concentration need to account for this.

Analyses

The analysis is divided by measures of points concentration and competitor dominance (Booth, 2005; Evans, 2014) in accordance with recent studies of competitive balance (Plumley et al., 2020; Ramchandani et al., 2018; Rocke, 2019). In total, five measures were used as metrics of balance: two concentration measures and three dominance measures.

Concentration Measures. To measure the dispersion of points within and between each season, the Standardized Herfindahl Index of Competitive Balance (SHICB) offered by Plumley et al. (2020) was employed as well as the Top 25% concentration ratio (T25; Ramchandani, 2012). In comparison to other measures of competitive balance, such as average points/win percentage standard deviation approaches (Booth, 2005), the SHICB and T25 method can better accommodate draws that occur, changes in competition size, varying season length and facilitate between competition analyses over the mid- and long-term (Michie & Oughton, 2004; Plumley et al., 2020). Further, the ratio of standard deviations approach to measuring competitive balance is sensitive to season length (Owen & King, 2015). Considering that tied matches are possible in rugby league and competition size and length varies over time within and between both the NRL and SL, the SHICB and T25 are the most appropriate measures of competitive balance. Further, the use of SHICB enables reference and comparison to competitions in other sports (e.g., Mondal, 2021; Plumley et al., 2020).

SHICB is derived from the Herfindahl Index of Competitive Balance (HICB). HICB is calculated by dividing the sum of the square of each team's percentile share of total points in a year (expressed as HI) by 1, over the number of teams in

a league (expressed as N), and then multiplying by 100. The full equation is expressed as follows:

$$HICB = \left(\left(\frac{HI}{1} \right) \times 100 \right) \frac{1}{N}$$

The advantage of the SHICB is that it accounts for differences in competition size, enabling better comparison in points concentration between different-sized leagues. To calculate the SHICB, HICB is divided by the maximum HICB value for a league calculated as the score for a perfectly imbalanced league of that size, then multiplied by 100. This formula is expressed as follows:

$$SHICB = \left(\frac{HICB}{Maximum\ HICB} \right) \times 100$$

A score of 100 represents perfect imbalance, and a decrease in value represents improved balance. SHICB scores provide insight into mid-term uncertainty and examining changes in SHICB over time shows long-term uncertainty trends. The second measure of concentration used is the T25 concentration measure (Ramchandani, 2012), which reflects the share of points attained by the upper quartile of teams. Differences in concentration values for the NRL and SL were analyzed using independent samples t -test, and changes in value were analyzed using Pearson's correlation coefficient (r) against time (each season representing a data point).

Dominance Measures. Dominance measures were utilized as proposed by Plumley et al. (2020) to account for between season balance (i.e., long-term uncertainty). The measures calculate the number of titles won by each club, the maximum number of titles won by a single club, and the number of different teams to finish in the top three. Independent t -tests were used to compare values between dominance measures for the NRL and SL.

Results

Concentration

The first concentration measure presented is the SHICB (see Table 1). At a mid-term level, the average SHICB for the NRL was 78.1 ($SD = 1.8$) and 83.3 ($SD = 3.3$) for the SL. This indicates that, on average, the NRL has been more competitive as measured by points distribution within seasons. The independent samples t -test indicates a significant difference in SHICB ($t(15) = -6.813, p < .000$), confirming that points distribution is better in the NRL at a midterm level. The correlation coefficient indicated a nonsignificant positive association (see Figure 1, $r = .22, p = .34$) for

Table 1. Yearly, Average and Correlation Coefficient Values for NRL and SL SHICB and T25.

Year	NRL		SL	
	SHICB	T25	SHICB	T25
1996	—	—	89.81	42.8
1997	—	—	84.56	38.64
1998	76.4	37.08	88.2	42.03
1999	75.49	31.51	87.74	33.81
2000	76.94	36.19	87.3	41.07
2001	79.12	39.56	84.6	39.52
2002	81.28	38.64	85.36	38.99
2003	79.01	35.71	84.77	37.88
2004	77.94	36.6	85.89	38.99
2005	74.72	32.86	84.87	38.1
2006	77.83	34.62	80.5	37.95
2007	77.53	34.38	77.17	33.96
2008	77.57	33.04	79.5	36.73
2009	79.14	33.77	80.88	39.95
2010	81.55	33.65	82.89	42.06
2011	79.19	34.82	84.78	42.16
2012	77.06	33.48	82.89	41.67
2013	77.63	33.93	81.35	41.22
2014	75.87	31.25	83.59	39.78
2015	76.56	33.04	79.69	34.78
2016	80.86	35.32	80.39	36.67
2017	78.92	34.38	80.39	35.14
2018	78.54	32.69	83.39	38.04
2019	78.69	34.62	78.72	35.06
Average	78.1	34.6	83.3	38.6
Pearson (<i>r</i>)	.22	-.45*	-.71**	-.29

Note. NRL = National Rugby League; SL = Super League; SHICB = Standardized Herfindahl Index of Competitive Balance; T25 = Top 25% concentration ratio.

* $p < .05$. ** $p < .01$.

long-term SHICB over time for the NRL and a significant negative association (see Figure 1, $r = -.71$, $p < .000$) for long-term SHICB over time for the SL.

The average seasonal T25 for the NRL was 34.6 ($SD = 2.1$) and 38.6 ($SD = 2.7$) for the SL (see Table 1). This indicates that on average within a season the NRL has been more competitive with a lower percentage of league points concentrated in the top 25% of teams. An independent samples *t*-test indicates a significant difference in T25 ($t(15) = -5.569$, $p < .000$), confirming that points are less concentrated in the top 25% of teams in the NRL compared to the SL. The coefficient indicated a significant negative association (see Figure 2, $r = -.45$, $p = .03$) for long-term T25 over time in the NRL. The correlation coefficient indicated a nonsignificant negative association (see Figure 2, $r = -.29$, $p = .18$) for long-term T25 over time in the SL.

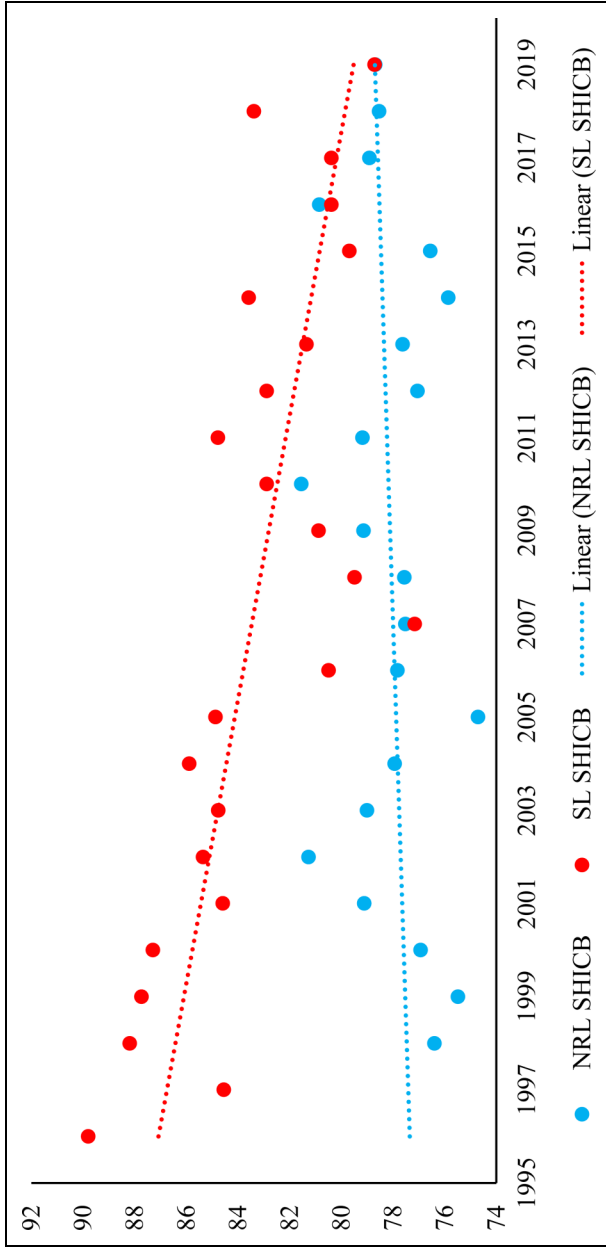


Figure 1. Scatter plot with linear trendline for SHICB over time in the NRL (blue) and SL (red).
 Notes: SHICB = Standardized Herfindahl Index of Competitive Balance; NRL = National Rugby League; SL = English Super League.

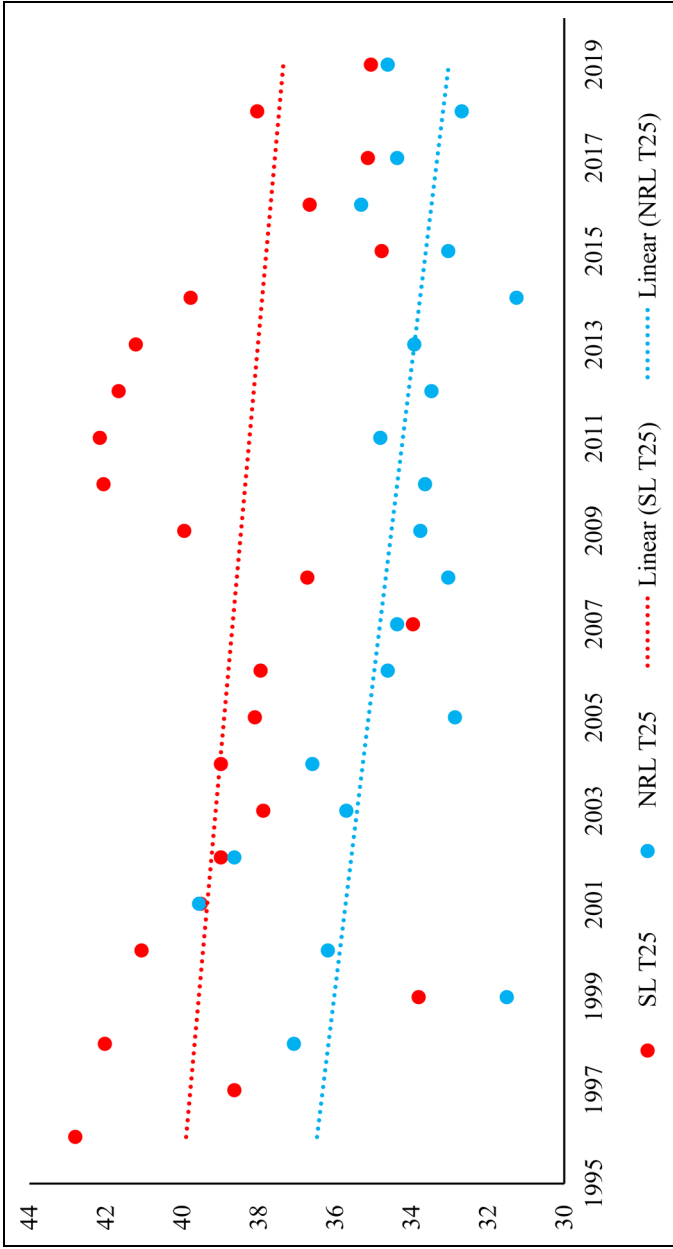


Figure 2. Scatter plot with linear trendline for T25 over time in the NRL (blue) and SL (red).
 Notes: NRL = National Rugby League; SL = English Super League; T25 = Top 25% concentration ratio.

Dominance

The measures of dominance are displayed in Tables 2 and 3. Initial inspection of the data suggests that in the long term the SL has been dominated by St. Helens, Wigan, Bradford Bulls and Leeds Rhinos as each team has been represented in the top three finishing positions in at least 50% of the seasons in which they have competed. In comparison, only the Sydney Roosters, Melbourne Storm and Brisbane Broncos have managed to achieve 40.9% representation in the top three finishing positions³.

The NRL had nine unique winners (37.5%) and 15 separate clubs in the top three (62.5%). The maximum number of top place finishes in the NRL was obtained by the Sydney Roosters (five) and the maximum number of top three finishes was shared by Sydney Roosters, Melbourne Storm, and Brisbane Broncos (nine). In comparison, the SL had eight unique top finishers (36.3%) and 12 separate clubs in the top three (54.5%). St. Helens held both the maximum number of top place finishes (nine) and the maximum number of top three finishes (17). The NRL's greater diversity in unique winners and top three finishers and lower maximum number of top

Table 2. Every SL Team That has Featured Since 1996; Number of Seasons Competed per Club; Number and Percentage of Top Position Finishes After the Regular Season per Club; Number and Percentage of Top Three Final League Position After the Regular Season per Club.

Team	Seasons	Top	Top (%)	Top three	Top three (%)
St. Helens	24	9	37.5	17	70.8
Wigan	24	4	16.7	14	58.3
Bradford Bulls	19	4	21.1	10	52.6
Leeds Rhinos	24	3	12.5	12	50.0
Hull F.C.	22	1	4.5	5	22.7
Warrington Wolves	24	1	4.2	5	20.8
Huddersfield Giants	21	1	4.8	3	14.3
Halifax	8	0	0	1	12.5
Castleford Tigers	22	1	4.5	2	9.1
Catalans Dragons	14	0	0	1	7.1
London Broncos	20	0	0	1	5
Salford City Reds	21	0	0	1	4.8
Wakefield Trinity Wildcats	21	0	0	0	0
Hull Kingston Rovers	12	0	0	0	0
Widnes Vikings	11	0	0	0	0
Sheffield Eagles	4	0	0	0	0
Celtic Crusaders	3	0	0	0	0
Leigh Centurions	2	0	0	0	0
Oldham Bears	2	0	0	0	0
Paris Saint-Germain	2	0	0	0	0
Gateshead Thunder	1	0	0	0	0
Workington Town	1	0	0	0	0

Table 3. Every National Rugby League Team That has Featured Since 1998; Number of Seasons Competed per Club; Number and Percentage of Top Position Finishes After the Regular Season per Club; Number and Percentage of Top Three Final League Position After the Regular Season per Club.

Team	Seasons	Top	Top (%)	Top three	Top three (%)
Sydney Roosters	22	5	22.7	9	40.9
Melbourne Storm	22	4	18.2	9	40.9
Brisbane Broncos	22	2	9.1	9	40.9
Canterbury-Bankstown Bulldogs	22	1	4.5	6	27.3
South Sydney Rabbitohs	20	0	0	5	25.0
Manly Warringah Sea Eagles	19	0	0	4	21.1
Newcastle Knights	22	0	0	4	18.2
St. George Illawarra Dragons	21	2	9.5	3	14.3
Parramatta Eels	22	2	9.1	3	13.6
Cronulla Sharks	22	1	4.5	3	13.6
North Queensland Cowboys	22	0	0	2	9.1
Penrith Panthers	22	1	4.5	2	9.1
Gold Coast Titans	13	0	0	1	7.7
Wests Tigers	20	0	0	1	5.0
Canberra Raiders	22	0	0	1	4.5
New Zealand (Auckland) Warriors	22	1	4.5	1	4.5
Northern Eagles	3	0	0	0	0.0
North Sydney Bears	2	0	0	0	0.0
Western Suburbs Magpies	2	0	0	0	0.0
Balmain Tigers	2	0	0	0	0.0
Gold Coast Chargers	1	0	0	0	0.0
Adelaide Rams	1	0	0	0	0.0
St George Dragons	1	0	0	0	0.0
Illawarra Steelers	1	0	0	0	0.0

place finishes and top three finishes indicates superior long-term competitive balance in terms of total dominance (i.e., between-season competitive balance).

Discussion

The aim of this research was to examine the mid- and long-term competitive balance between and within seasons in the NRL and SL using measures of concentration and dominance to compare open and closed league systems. The analysis produced mixed findings for concentration, as the NRL showed a significant long-term negative trend in T25, indicating that the top quartile of teams had achieved a lower proportion of total points; however, the SHICB showed a nonsignificant positive trend indicating worsening within-season balance. In contrast, the SL demonstrated a strong improving pattern in SHICB, and an encouraging nonsignificant trend in T25 between seasons, suggesting that the mid- and long-term competitive balance

has been increasing. Despite the improvements in concentration shown by the SL, in comparison to the NRL, mid-term within-season competitive balance was significantly worse. The NRL's superior within-season balance is supported by better long-term between-season balance as indicated by measures of dominance. The NRL displayed more unique competition winners and top three finishers as well with a lower maximum number of top place finishes and top three finishes. Overall, the NRL is a more balanced competition, but the SL results demonstrated an improving trend toward a more balanced competition.

The NRL's better competitive balance makes sense theoretically when comparing the competition's different objective functions (Andreff, 2019; Fort & Quirk, 2004). The NRL as a closed competition has greater capacity to regulate the labor market and ensure parity between teams, as seen by the collective bargaining that ensures a minimum equal wage for all players. This does not mean that the clubs within the NRL are all profit maximizers as the league is a mix of member-owned and privately owned clubs (Sport Industry AU, 2021); however, regardless of the objective clubs have a safety net providing an opportunity to rebuild following catastrophic seasons without fears of relegation. Comparatively, the SL has operated a salary cap to control talent distribution among privately owned teams in an attempt to regulate competitive balance and has also switched between open and closed league systems. In doing so, the league reduced the security of clubs that did not have the luxury of investing in a period of underperformance in order to rebuild a team able to compete for the title without fear of relegation.

In comparison to the within-season competitive balance of other sporting competitions, SHICB has been used to examine the "big five" men's Asian soccer leagues (China, Iran, South Korea, Qatar, United Arab Emirates; Plumley et al., 2020) and the top five women's soccer leagues in Europe (England, France, Germany, Norway, Sweden; Mondal, 2021). The average SHICB values of the NRL (78.1) and SL (83.3) are comparable to the values demonstrated by the big five of Asian football (77.52–81.59), and better than the values for the top five women's football leagues in Europe (87.32–91.23). It is hard to distinguish what is a "good" value for competitive balance, but it might at least be concluded that the within-season competitive balance in the NRL and SL is similar to other competitions.

The value of this research is underpinned by the evidence it provides concerning the longevous assumption that competitive balance generates fan interest which can then be monetized (Rottenberg, 1956). Therefore, league regulators gain value from (1) an improved understanding of the balance of their competition within and between seasons and (2) debating how to improve competitive balance in future seasons. The analysis also exposes the need for league regulators to consider other methods to improve competitive balance. At present, neither the NRL nor SL operate any form of bonus point system. In comparison, the major domestic and international rugby union competitions all operate a points system that rewards teams that score a certain amount of tries, win by a set amount of tries, or lose by a predetermined amount or less. The rationale for these bonus points is to encourage teams

to keep attempting to score points, even if the game may appear lost, therefore improving the competition's attractiveness. Equally, teams may engage in behavior that deliberately prevents their opposition from winning a bonus point (e.g., greater focus on not conceding points than scoring points) that negatively impacts the competition's attractiveness.

Appreciating that the adoption of a bonus points system would likely change the playing style of teams, a comparison between SHICB scores for different scenarios illuminates the potential benefits. For example, in 2019, the NRL had an SHICB value of 78.7 when a win, draw (i.e., no team has taken the lead after an additional golden point period) or loss was worth 2, 1 or 0 points, respectively. Under a system where a win is worth 2, and a bonus point can be awarded for scoring four tries or more, or losing by less than or equal to a converted try (6 points or less), the SHICB is reduced to 78.2 and on average each team would have moved one position, with a maximum change of three positions up the table. Although limited by its hypothetical nature, this example supports the introduction of a bonus points system as a mechanism to increase competitive balance and bolster fan interest. The caveat to this suggestion is that bonus points might encourage negative defensive play that proves detrimental to the competition's attractiveness. This risk illustrates the complexity facing competition regulators in rugby league and other sports. Regulatory devices designed to improve within and between-season balance with the intention of improving competition attractiveness may end up having the opposite effect intended (Kendall & Lenten, 2017).

Conclusion

Sports regulators around the world are facing a turbulent future as COVID-19 has exacerbated uncertainty and insecurity stemming from competition models. Therefore, the need to deliver an attractive product (i.e., competition) to fans has been amplified in importance given the ramifications accompanying recent commercial shortfalls. Ensuring adequate competitive balance is one part of the larger commercial plans league regulators will need to consider. This analysis of the NRL and SL reinforces previous suggestions that closed competitions with no relegation should demonstrate better competitive balance (Andreff, 2019; Fort & Quirk, 2004). Further, the concentration measure results showed that the SL is on a positive trajectory as competitive balance has improved since the league's creation. However, there remains the issue for both leagues of reducing the dominance of a small cluster of clubs. We have speculated that the inclusion of a bonus point system would improve competitive balance from a concentration perspective, but it is unclear what effect this may have on dominance. The introduction of a bonus point system should be thoroughly investigated prior to launch as well by canvassing the opinions of fans, clubs, and sponsors. This article compared the competitive balance between and within-seasons in the NRL and SL using measures of concentration

and dominance. It portrays a complex reality between leagues and aspects of competitive balance and encourages further research into the nuanced role of competitive balance in the study of rugby league and, more broadly, the regulatory environment of sport as “big business” (Pomfret & Wilson, 2011).

The present study was limited in that it did not investigate fan engagement. In terms of future research, it would be advantageous to determine to what extent does within- and between-season competitive balance predict fan attendance and match viewership in rugby league. Likewise, the current study does not examine short-term game uncertainty, which may offer further insight. Future research should also look at the importance of the SHICB score against other indicators of competition popularity. Additionally, the suggested bonus points system proffered here is hypothetical. A specific observational study of the effect of the introduction of bonus points on competitive balance in other competitions would be instructive to practitioners looking to create a compelling competition. Further, qualitative research about fan attitudes toward bonus points would be useful, as there is the potential for bonus points to promote teams above rivals who have a superior win-loss ratio but have accrued fewer bonus points. Lastly, this study did not examine short-term match-level parity between the two leagues. It is possible that the NRL may have demonstrated greater parity at a league level, but the SL may be compromised due to closer matches (e.g., a smaller average losing margin).


Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

ORCID iD

Daniel Read  <https://orcid.org/0000-0001-6007-0586>

Notes

1. Rugby union remained officially an amateur sport until 1995.
2. The highest-ranked eight teams at the end of the regular NRL season participate in a four-week tournament culminating in a “grand final” to decide the premiership, or competition winner.
3. The Melbourne Storm’s minor premiership titles in 2006, 2007, and 2008 were retrospectively revoked for salary cap infringements and have not been included.

References

- Alavy, K., Gaskell, A., Leach, S., & Szymanski, S. (2010). On the edge of your seat: Demand for football on television and the uncertainty of outcome hypothesis. *International Journal of Sport Finance*, 5(2), 75–95.
- Andreff, W. (2019). Origins and developments of sports systems. In P. Downward, B. Frick, B. R. Humphreys, T. Pawlowski, J. E. Ruseski, & B. P. Soebbing (Eds.), *The SAGE handbook of sports economics* (pp. 8–18). SAGE.
- Bačik, V., Klobučnik, M., & Mignot, J. F. (2019). What made the tour successful? Competitive balance in the tour de France, 1947–2017. *Sport in Society*, 24(2), 147–159. <https://doi.org/10.1080/17430437.2019.1621844>
- BBC. (2005). Super League set for 2009 changes. BBC Sport. Retrieved from <http://news.bbc.co.uk/>
- BBC. (2020). Super League clubs vote to keep existing salary cap level. BBC Sport. Retrieved from <http://news.bbc.co.uk/>
- Booth, R. (2004). The economics of achieving competitive balance in the Australian Football League, 1897–2004. *Economic Papers: A Journal of Applied Economics and Policy*, 23(4), 325–344. <https://doi.org/10.1111/j.1759-3441.2004.tb00986.x>
- Booth, R. (2005). Comparing competitive balance in Australian Sports Leagues: Does a salary cap and player draft measure up? *Sport Management Review*, 8(2), 119–143. [https://doi.org/10.1016/S1441-3523\(05\)70036-X](https://doi.org/10.1016/S1441-3523(05)70036-X)
- Borland, J., & MacDonald, R. (2003). Demand for sport. *Oxford Review of Economic Policy*, 19(4), 478–502.
- Bower, A. (2017). Super League clubs vote for salary cap rise and second marquee player. The Guardian. Retrieved from <https://www.theguardian.com/sport/>
- Budzinski, O., & Pawlowski, T. (2017). The behavioral economics of competitive balance: Theories, findings, and implications. *International Journal of Sport Finance*, 12(2).
- Buraimo, B., & Simmons, R. (2008). Do sports fans really value uncertainty of outcome? Evidence from the English Premier League. *International Journal of Sport Finance*, 3(3), 146–155.
- 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. <https://doi.org/10.1016/j.jeconbus.2008.10.002>
- Caporale, T., & Collier, T. C. (2015). Are we getting better or are they getting worse? Draft position, strength of schedule, and competitive balance in the National Football League. *Journal of Labor Research*, 36(3), 291–300. <https://doi.org/10.1007/s12122-015-9206-z>
- Coates, D., & Humphreys, B. R. (2012). Game attendance and outcome uncertainty in the National Hockey League. *Journal of Sports Economics*, 13(4), 364–377. <https://doi.org/10.1177/1527002512450260>
- Coates, D., Humphreys, B. R., & Zhou, L. (2014). Reference-dependent preferences, loss aversion, and live game attendance. *Economic Inquiry*, 52(3), 959–973. <https://doi.org/10.1111/ecin.12061>

- Collins, T. (2006). *Rugby league in twentieth century Britain: A social and cultural history*. Routledge.
- Cox, A. (2018). Spectator demand, uncertainty of results, and public interest: Evidence from the English Premier League. *Journal of Sports Economics*, 19(1), 3–30. <https://doi.org/10.1177/1527002515619655>
- Dabscheck, B. (1975) 'Sporting equality: Labour market v product market control', *Journal of Industrial Relations*, 7, 174–190.
- Dang, T. M., Booth, R., Brooks, R., & Schnytzer, A. (2015). Do TV viewers value uncertainty of outcome? Evidence from the Australian Football League. *Economic Record*, 91(295), 523–535. <https://doi.org/10.1111/1475-4932.12206>
- El-Hodiri, M., & Quirk, J. (1971). An economic model of a professional sports league. *Journal of Political Economy*, 79(6), 1302–1319.
- Evans, R. (2014). A review of measures of competitive balance in the “analysis of competitive balance” literature. *Birkbeck Sport Business Centre Research Paper Series*, 7(2), 1–59.
- Falcous, M. (1998). TV made it all a new game: Not again! Rugby league and the case of the ‘superleague’. *Occasional Papers in Football Studies*, 1(1), 4–21.
- Feddersen, A., & Rott, A. (2011). Determinants of demand for televised live football: Features of the German National Football Team. *Journal of Sports Economics*, 12(3), 352–369. <https://doi.org/10.1177/1527002511404783>
- Flores, R., Forrest, D., & Tena, J. D. D. (2010). Impact on competitive balance from allowing foreign players in a sports league: Evidence from European soccer. *Kyklos*, 63(4), 546–557. <https://doi.org/10.1111/j.1467-6435.2010.00487.x>
- Fort, R. (2017). Competitive balance in north American professional sports. In *Handbook of sports economics research* (pp. 190–206). Routledge.
- Fort, R. (2019). Economic objective functions in team sports: A retrospective. *The SAGE Handbook of Sports Economics*, 125–134. <http://dx.doi.org/10.4135/9781526470447.n13>
- Fort, R., & Quirk, J. (1995). Cross-subsidization, incentives, and outcomes in professional team sports leagues. *Journal of Economic Literature*, 33(3), 1265–1299.
- Fort, R., & Quirk, J. (2004). Owner objectives and competitive balance. *Journal of Sports Economics*, 5(1), 20–32. <https://doi.org/10.1177/1527002503261275>
- Hadfield, D. (1996). Lindsay defends the Super League revolution. *The Independent*. Retrieved from <https://www.independent.co.uk/sport/>
- Jane, W. J. (2016). The effect of star quality on attendance demand: The case of the National Basketball Association. *Journal of Sports Economics*, 17(4), 396–417. <https://doi.org/10.1177/1527002514530405>
- Késenne, S. (2000). Revenue sharing and competitive balance in professional team sports. *Journal of Sports Economics*, 1(1), 56–65.
- Kendall, G., & Lenten, L. J. (2017). When sports rules go awry. *European Journal of Operational Research*, 257(2), 377–394.
- King, N., Owen, P. D., & Audas, R. (2012). Playoff uncertainty, match uncertainty and attendance at Australian National Rugby League matches. *Economic Record*, 88(281), 262–277.

- Larsen, A., Fenn, A. J., & Spenner, E. L. (2006). The impact of free agency and the salary cap on competitive balance in the National Football League. *Journal of Sports Economics*, 7(4), 374–390. <https://doi.org/10.1177/2F1527002505279345>
- Lee, T. (2010). Competitive balance in the National Football League after the 1993 collective bargaining agreement. *Journal of Sports Economics*, 11(1), 77–88. <https://doi.org/10.1177/2F1527002509336207>
- Lenten, L. J. (2009). Towards a new dynamic measure of competitive balance: A study applied to Australia's two major professional 'football' leagues. *Economic Analysis and Policy*, 39(3), 407–428. [https://doi.org/10.1016/S0313-5926\(09\)50036-7](https://doi.org/10.1016/S0313-5926(09)50036-7)
- Lenten, L. J., Smith, A. C., & Boys, N. (2018). Evaluating an alternative draft pick allocation policy to reduce 'tanking' in the Australian Football League. *European Journal of Operational Research*, 267(1), 315–320. <https://doi.org/10.1016/j.ejor.2017.11.029>
- Macdonald, R., & Booth, R. (2007). Around the grounds: A comparative analysis of football in Australia. In B. Stewart (Ed.), *The games are not the same: The political economy of football in Australia* (pp. 236–331). Melbourne University Press.
- McGaughey, S. L., & Liesch, P. W. (2002). The global sports–media nexus: Reflections on the 'super league saga' in Australia. *Journal of Management Studies*, 39(3), 383–416.
- Michie, J., & Oughton, C. (2004). *Competitive balance in football: Trends and effects* (pp. 1–38). The Sports Nexus.
- Mills, B., & Fort, R. (2014). League-level attendance and outcome uncertainty in US pro sports leagues. *Economic Inquiry*, 52(1), 205–218. <https://doi.org/10.1111/ecin.12037>
- Mondal, S. (2021). She kicks: The state of competitive balance in the top five women's football leagues in Europe. *Journal of Global Sport Management*, 1–23. <https://doi.org/10.1080/24704067.2021.1875629>
- Neale, W. C. (1964). The peculiar economics of professional sports. *The Quarterly Journal of Economics*, 78(1), 1–14.
- NRL. (2020a). The Salary Cap. National Rugby League. Retrieved from <https://www.nrl.com/operations/integrity/salary-cap/>
- NRL. (2020b). Annual Report 2019. National Rugby League. Retrieved from https://www.nrl.com/siteassets/about/annual-reports/nrl_annualreport_2019.pdf
- 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. <https://doi.org/10.1111/ecin.12102>
- Paul, R. J., & Weinbach, A. P. (2007). The uncertainty of outcome and scoring effects on Nielsen ratings for Monday night football. *Journal of Economics and Business*, 59(3), 199–211. <https://doi.org/10.1016/j.jeconbus.2006.05.001>
- Pawlowski, T., & Anders, C. (2012). Stadium attendance in German professional football—The (un) importance of uncertainty of outcome reconsidered. *Applied Economics Letters*, 19(16), 1553–1556. <https://doi.org/10.1080/13504851.2011.639725>
- Pawlowski, T., & Nalbantis, G. (2019). Competitive balance: Measurement and relevance. In P. Downward, B. Frick, B. R. Humphreys, T. Pawlowski, J. E. Ruseski, & B. P. Soebbing (Eds.), *The SAGE handbook of sports economics* (pp. 8–18). SAGE.

- Pengilly, A., & Phillips, S. (2020). Can your NRL club survive the coronavirus hiatus? The Sydney Morning Herald. Retrieved from <https://www.smh.com.au/sport/>
- Plumley, D., Mondal, S., Wilson, R., & Ramchandani, G. (2020). Rising stars: Competitive balance in five Asian football leagues. *Journal of Global Sport Management*, 1–20. <https://doi.org/10.1080/24704067.2020.1765700>
- Plumley, D., Ramchandani, G., & Wilson, R. (2018a). Mind the gap: An analysis of competitive balance in the English football league system. *International Journal of Sport Management and Marketing*, 18(5), 357–375.
- Plumley, D., Ramchandani, G. M., & Wilson, R. (2018b). The unintended consequence of Financial Fair Play: An examination of competitive balance across five European football leagues. *Sport, Business and Management: An International Journal*. <https://doi.org/10.1108/SBM-03-2018-0025>
- Pomfret, R., & Wilson, J. K. (2011). The peculiar economics of government policy towards sport. *Agenda: A Journal of Policy Analysis and Reform*, 18(1), 85–98.
- Press Association. (2020). Rugby league heading for ‘Armageddon’ without financial aid, warns Hull FC owner. BT Sports. Retrieved from <https://www.bt.com/sport/news/>
- Quirk, J., & Fort, R. (1992) *Pay dirt: The business of professional team sports*, Princetown University Press.
- Ramchandani, G. (2012). Competitiveness of the English Premier League (1992–2010) and ten European football leagues (2010). *International Journal of Performance Analysis in Sport*, 12(2), 346–360. <https://doi.org/10.1080/24748668.2012.11868603>
- Ramchandani, G., Plumley, D., Boyes, S., & Wilson, R. (2018). A longitudinal and comparative analysis of competitive balance in five European football leagues. *Team Performance Management: An International Journal*, 24(5/6), 265–282. <https://doi.org/10.1108/TPM-09-2017-0055>
- Rebeggiani, L. (2016). The organizational structure of professional road cycling. In *The economics of professional road cycling* (pp. 33–54). Springer.
- RFL. (2020). Annual Report 2019. Rugby Football League. Retrieved from http://secure.rugby-league.com/ign_docs/Annual%20Report%202019%20FINAL.pdf
- Rocke, K. D. (2019). Competitive balance within CONCACAF: A longitudinal and comparative descriptive review of the seasons 2002/2003–2017/2018. *Managing Sport and Leisure*, 24(6), 445–460.
- Rohde, M., & Breuer, C. (2018). Competing by investments or efficiency? Exploring financial and sporting efficiency of club ownership structures in European football. *Sport Management Review*, 21(5), 563–581. <https://doi.org/10.1080/23750472.2019.1685403>
- Rottenberg, S. (1956). The baseball players’ labor market. *Journal of Political Economy*, 64(3), 242–258.
- Scelles, N., Durand, C., Bonnal, L., Goyeau, D., & Andreff, W. (2013). Competitive balance versus competitive intensity before a match: Is one of these two concepts more relevant in explaining attendance? The case of the French football league 1 over the period 2008–2011. *Applied Economics*, 45(29), 4184–4192. <https://doi.org/10.1080/00036846.2013.770124>

- Schreyer, D., Schmidt, S. L., & Torgler, B. (2016). Against all odds? Exploring the role of game outcome uncertainty in season ticket holders' stadium attendance demand. *Journal of Economic Psychology*, 56, 192–217.
- Schreyer, D., Schmidt, S. L., & Torgler, B. (2017). Game outcome uncertainty and the demand for international football games: Evidence from the German TV market. *Journal of Media Economics*, 30(1), 31–45. <https://doi.org/10.1080/08997764.2017.1281818>
- Schreyer, D., Schmidt, S. L., & Torgler, B. (2018). Predicting season ticket holder loyalty using geographical information. *Applied Economics Letters*, 25(4), 272–277.
- Skinner, J. & Edwards, A. (2007): Crashing through the class barrier: Rugby league's metamorphosis. In B. Stewart (Ed), *The games are not the same: The political economy of football in Australia* (pp. 121–154). Melbourne University Press.
- Sloane, P. J. (1971). Scottish journal of political economy: The economics of professional football: The football club as a utility maximiser. *Scottish Journal of Political Economy*, 18(2), 121–146.
- Soebbing, B. P. (2008). Competitive balance and attendance in Major League Baseball: An empirical test of the uncertainty of outcome hypothesis. *International Journal of Sport Finance*, 3(2), 119–126.
- Sport Industry AU. (2021). The AFL, NRL and Privatisation. Retrieved from http://www.footyindustry.com/?page_id=704
- Stewart, M. F., Stavros, C., Phillips, P., Mitchell, H., & Barake, A. J. (2016). Like father, like son: Analyzing Australian football's unique recruitment process. *Journal of Sport Management*, 30(6), 672–688. <https://doi.org/10.1123/jsm.2015-0254>
- Szymanski, S. (2003). The economic design of sporting contests. *Journal of Economic Literature*, 41(4), 1137–1187.
- Szymanski, S. (2010). *The comparative economics of sport*. Springer.
- Szymanski, S., & Késenne, S. (2004). Competitive balance and gate revenue sharing in team sports. *The Journal of Industrial Economics*, 52(1), 165–177.
- Vrooman, J. (1997). A unified theory of capital and labor markets in major league baseball. *Southern Economic Journal*, 594–619.
- Willacy, G. (2018). Super League's global growth may expose England's low-income clubs. The Guardian. Retrieved from <https://www.theguardian.com/sport/>
- Wilson, R., Plumley, D., & Barrett, D. (2015). Staring into the abyss? The state of UK rugby's Super League. *Managing Sport and Leisure*, 20(6), 293–310. <https://doi.org/10.1080/23750472.2016.1141367>

Author Biographies

Daniel Read is a lecturer at the Institute for Sport Business, Loughborough University London.

Aaron C.T. Smith is a Professor at the Institute for Innovation & Entrepreneurship, Loughborough University London.

James Skinner is a Professor at the Institute for Sport Business, Loughborough University London.