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Professional Rugby on the Celtic Fringe

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PROFESSIONAL
RUGBY ON THE CELTIC FRINGE

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Abstract

The design of sports leagues has significant financial implications for the organisers and member teams and for the relative success or failure of the individual clubs. Using the Pro 14 rugby league as an example we show how the structure of the league has influenced the success of the league overall and that of individual teams. We use variation in rules across time and space to identify their effects. We show how match attendance has been boosted by measures such as reducing the number of Sunday matches and the introduction of play-offs. We also show that the Pro14 have increased broadcast revenue largely through geographic expansion into larger broadcast markets. Furthermore, this has occurred without an adverse effect on match attendance.

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1: Introduction.

The design of sports leagues has significant financial implications for the organisers and member teams (Szymanski, 2003) and for the relative success or failure of the individual clubs (Wilson, Plumley & Barrett, 2015). The importance of broadcast revenue in modern sports means that leagues also need to make matches more attractive to broadcasters. European Rugby Union leagues and their member teams have struggled financially since the removal of the ban on professionalism in 1995 (Andreff, 2015; Wilson & Plumley, 2017). In Ireland, Scotland and Wales such problems were compounded due to their relatively small populations and broadcast markets (Massey, 2019). The sport's governing bodies in these countries sought to overcome these difficulties through a combination of (a) establishing a cross-country league – the Pro14 - to broaden the fan base;[1] (b) changes in league format and fixture schedules to raise attendances; and (c) geographic expansion into larger broadcast markets. The present paper presents empirical evidence on the effects of various structural changes on attendances and concludes that such changes, combined with increased broadcast revenue, have improved the financial position of the Pro14 and its teams.

The balance of the paper is structured as follows. The economic characteristics of sports leagues are summarised briefly in section 2. Section 3 provides a brief history of the Pro14. Section 4 considers the issue of league design while section 5 analyses potential conflicts of interest arising from the Pro14's governance structure. Evidence on competitive balance is presented in section 6. Empirical evidence on the impact of various measures on attendances is presented in section 7. The importance of broadcast income is considered in section 8. Some conclusions are offered in section 9.

2: Economic Characteristics of Sports Leagues.

League championship competitions are a common feature of professional team sports because they are a particularly effective way for teams to generate revenue to pay players (Szymanski, 2009). Leagues are designed to drive fan engagement and make a sport attractive to consumers (Wilson et al., 2015). Fans derive utility from (i) identifying with a specific team and (ii) the quality of the contest (Borland & MacDonald, 2003). Sports teams are highly interdependent since it is only through cooperation that they can produce a league championship competition

[1] The Pro14 which began life in 2001 as the Celtic League has been re-named on several occasions. Throughout the remainder of this paper we refer to it by its current name. The Pro14 is one of the three main European Rugby Union leagues along with English Premiership Rugby (EPR) and the French Top 14.

(Neale, 1964). Understanding teams' objectives is therefore central to the economic analysis of sports leagues (Cairns, Jennett, & Sloane, 1986).

Different models of sports leagues have emerged in Europe and North America. Szymanski (2009) attributes these differences to the institutional setting in which sports operate on either side of the Atlantic. Fort (2006) suggests that, in club run leagues, a conflict of interests between the league and its member clubs leads to sub-optimal decision making from the viewpoint of the league overall.

League design has significant financial implications for the league and its member clubs (Szymanski, 2003) and for the relative success or failure of individual clubs (Wilson et al., 2015). Changes in league structures may increase match attendances either for all clubs or for particular groups of clubs because they affect the attractiveness of fixtures (Dobson, Goddard & Wilson, 2001). In order to assess the impact of structural changes on attendance it is necessary to ask whether the changes:

- Create more matches that have championship significance?
- Create more local derbies?
- Create more 'repeat' fixtures between the same pairings of clubs?
- In the case of individual clubs, raise or lower the standard of the opposition they meet from week to week? (Dobson et al., 2001).

Play-offs at the end of the regular season to determine the championship increase the number of regular season matches that have championship significance and maintain fan interest over a longer period (Fort & Quirk, 1995; Williams, 2012). If too many teams qualify for the play-offs, however, this will lessen the importance of the regular season schedule (Szymanski, 2009).

There are various examples of leagues tailoring their fixture schedules to increase the number of attractive matches. Soccer's Scottish Premier League divides teams into 2 groups of 6 after 33 matches and teams play their final 5 matches against the other teams in their group resulting in greater demand than would be the case if the final 5 rounds were scheduled randomly (Lenten, 2008). Similarly, the NFL fixture schedule is designed so that the better performing teams in any season play each other more often the following season (Coates & Humphrey, 2010).

The decision to increase the number of points awarded for a win in soccer from 2 to 3 to encourage more attacking play is an example of a rule change designed to boost attendances (Hon & Parinduri, 2016). Rule changes were introduced in first-class cricket to reduce the likelihood of draws, increase scoring rates and reduce time wasting (Schofield, 1982). Many rugby competitions award bonus league points for teams scoring a certain number of tries and for losing narrowly in order to encourage exciting play and close contests (Winchester, 2014; Lenten & Winchester, 2015).

A recurring theme in the sports economics literature is the importance of uncertainty of outcome for maintaining supporter interest (Rottenberg, 1956; Neale, 1964; Fort and Quirk, 1995, Borland and MacDonald, 2003, Szymanski and Kesenne, 2004; Lee and Fort, 2012 and Budzinski and Pawlowski, 2017). It has been suggested, however, that supporters who attend matches are more interested in seeing the home team win rather than a close match, whereas television audiences are more interested in balanced contests (Szymanski, 2001; Alavy, Gaskell, Leach & Szymanski, 2010).

The interaction between sports and broadcasting also has implications for sports league structure. Competition between broadcasters for sports content combined with changes in broadcast technology has greatly increased broadcast revenue in many sports. This increased demand, however, highlighted the need for sports leagues to produce a coherent package for broadcasters.

> "The genius of the NFL was to recognise that television wanted more than a game, it wanted a myth and a spectacle of Hollywood proportions, an 'appointment to view' and an epic narrative." (Szymanski, 2009).

The increased importance of broadcast income has also generated competition between European soccer leagues to attract the best players since, by improving league quality in this way, leagues can secure higher revenues for their broadcast rights (Palomino & Sakovics, 2004). Several authors have argued, however, that, in the post-Bosman era, competitive balance has declined both within European soccer leagues and between leagues in European wide competition (Szymanski, 2007; Vrooman, 2007; Pawlowski, Brewer & Hovemann, 2010).

3: The Pro14 – A Brief History.

In contrast to most other major team sports, Rugby Union remained an amateur sport until 1995.[2] During the amateur era, the main focus was on international matches rather than club leagues (Kuper & Szymanski, 2012). In 1973 the Scottish Rugby Union (SRU) established a national club league in an attempt to improve its international team's performances (Massey, 2019). National club leagues were formed in Wales and Ireland in 1990/91.[3] The European Rugby Cup (ERC) involving teams from England, France, Ireland, Italy, Scotland and Wales was introduced in 1995, just before the removal of the ban on professionalism.[4]

Since 1947 teams representing the four provincial branches of the Irish Rugby Football Union (IRFU) had competed in an annual inter-provincial championship involving a single round robin series of fixtures. Scottish rugby had a similar competition involving four district representative teams dating back to 1953. These regional structures would play a key role in both countries following the move to professionalism. The IRFU entered its provincial representative teams rather than All Ireland League (AIL) clubs in the ERC. The SRU subsequently entered its district teams in the ERC the following year having not participated in the inaugural season of the competition.

Following the introduction of professionalism, the IRFU and SRU adopted a vertically integrated structure with centralised player contracts based around their existing provincial/district teams.[5] In Wales the move to professionalism led to a bitter battle between the Welsh Rugby Union (WRU) and the Welsh Premier League (WPL) clubs for long-term control of the game (Massey, 2019). The redevelopment of its national stadium, Murrayfield, left the SRU heavily indebted forcing it to close two of its four district professional teams in 1998/99. The two remaining Scottish teams joined the WPL which was renamed the Welsh-Scottish League in 1999/00.

In 2001/02 the IRFU, SRU and WRU established the Celtic League, with 15 teams - the nine WPL teams, four Irish provincial teams and the two remaining Scottish districts. The decision to establish the league reflected the fact that the fan base in all three countries was too small to

[2] Rugby split into amateur (Union) and professional (League) codes in 1895 but the amateur Union code remained the more widely played. Throughout this paper, rugby refers to Rugby Union unless otherwise stated.
[3] Irish rugby had a system of provincial leagues prior to this.
[4] English and Scottish teams did not participate in the inaugural season of the ERC.
[5] The decision by the IRFU to centrally contract players appears to have been prompted by concerns of a possible exodus of top players to overseas leagues.

support separate full-time professional leagues (Massey, 2019). The following season the SRU re-launched the Borders team, which it had closed three years earlier, increasing the league to 16 teams. The absence of a main sponsor represented a significant drawback in the league's early years (BBC Sport, 2004 and Thornley, 2005) and many Pro14 clubs struggled financially.

South Wales was unable to sustain nine professional teams. Having rejected WRU proposals for a vertically integrated structure with four regional franchises similar to Ireland, the Welsh clubs agreed in 2003 to create five regional teams through a series of club mergers/joint ventures. One of the new franchises– the Celtic Warriors – closed after just one season. The four remaining Welsh teams continued to struggle financially and agreed to adopt a salary cap of £3.5 million per team from the start of the 2012/13 season in a bid to cut costs but this resulted in an outflow of players to English and French clubs (Rees, 2013 & 2014a).

The SRU closed down the Borders franchise, located in Scottish rugby's traditional heartland, at the end of the 2006/07 season (SRU, 2007).

> "The Board recognised that, unlike other northern hemisphere nations, professional rugby in Scotland has struggled since the sport turned professional in 1995. In that period, Scottish Rugby has invested around £30 million in its various pro teams, yet the concept of pro team rugby in Scotland has never fully taken off." (SRU, 2007)

In 2016 the SRU announced that it was prepared to sell its two Pro14 teams (SRU, 2016).

The IRFU also considered closing one of its four teams but backed off in the face of strong public opposition (Thornley, 2017a). In 2014 the IRFU dropped its opposition to its teams topping-up players' salaries through sponsorship deals in order to prevent players moving to English and French clubs (Massey, 2019). In 2016/17 the IRFU announced that another of its teams was unable to repay loans which the IRFU had advanced to it (Cummiskey, 2016).

A majority of EPR and Top14 clubs have also experienced ongoing financial problems since the introduction of professionalism and there have also been some club failures in both of those leagues. (Andreff, 2015; Wilson & Plumley, 2017).

The restructuring of the Welsh clubs reduced the league to 12 teams in 2003/04. It was reduced to 10 teams following the closures of the Celtic Warriors in 2004/05 and of the Borders in 2006/07. The league responded by expanding geographically. Attempts to recruit London Irish and London Welsh from the EPR proved unsuccessful (Rees, 2006). However, in 2010/11 it added two Italian teams and was renamed the Pro12.

Ostensibly the inclusion of the Italian teams was intended to raise standards in Italian rugby and enhance their ability and that of the Italian national team to compete at European and international level. The €3m annual fee that the Italian federation (FIR) agreed to pay for their inclusion and the additional two home matches per season for the remaining teams was probably a factor also.

The original plan for a Rome based franchise failed to materialise (ESPN, 2009). One of the new Italian teams collapsed after just two seasons. It was replaced by a new Italian franchise which was subsequently taken over by the FIR in 2017 (BBC Sport, 2017).[6]

In 2017/18 the Pro12 became the Pro14 following the addition of two South African teams which had been dropped from the Super Rugby Championship.[7] This was described as "the first phase of expansion as the Guinness PRO14 becomes a truly global tournament" (Pro14, 2017). There have been suggestions that other South African Super Rugby teams might be added in the future (Cummiskey, 2018) while the possibility of additional franchises in the US and other European countries has also been mooted (Rees, 2017).

Table 1 summarises the key events in the development of the Pro14.

Table 1: Evolution of Pro14.

1995	September – Launch of European Rugby Cup (ERC). November - IRB revokes ban on professionalism.
1999	Welsh-Scottish League established.
2001/2	Celtic League established with 15 teams: 9 Welsh, 4 Irish and 2 Scottish. Teams split into two sections and play other teams in their section once with top 4 in each section qualifying for play-offs.
2002/3	Third Scottish team – Borders - joins increasing league to 16 teams.

[6] For a more detailed account of the financial problems of Pro14 clubs see Massey (2019).
[7] Super Rugby is a rugby league comprising teams from Argentina, Australia, Japan, New Zealand and South Africa.

2003/4	Series of mergers reduces number of Welsh teams from 9 to 5, reducing league to 12 teams. Switch to a straight league format with a double round robin fixture schedule.
2004/5	WRU wind-up Celtic Warriors franchise – leaving 11 member teams.
2007/8	SRU closes Borders franchise leaving 10 teams.
2009/10	Introduction of end of season play-offs to decide league champions.
2010/11	League increased to 12 teams and renamed the Pro12 with addition of two Italian teams.
2012/13	Italian team Aironi collapses, replaced by Zebre. Four Welsh teams agree to adopt a salary cap.
2016/17	IRFU announces that Munster unable to repay loans to IRFU. Italian team Zebre announces it requires financial support to complete the season. WRU buys out its Dragons joint venture partner.
2017/18	2 South African teams added. League renamed the Pro14 and switches to 2 conference structure. FIR takes control of Zebre.

4: League Structures and Governance.

The Pro14 has evolved toward a US sports league model. It is a closed league without promotion and relegation with play-offs to decide the championship (since 2009/10) and a two-conference structure (since 2017/18). As yet it has not adopted salary caps,[8] and player drafts which are common in US sports leagues. In Ireland and Scotland, representative teams which only played three or four matches a season during the amateur era have been transformed into professional franchises, while completely new teams were created in Italy and Wales.

Unlike the Pro14, English and French rugby both adopted a European soccer model, albeit with some elements of US sports league models, such as play-offs and salary caps (Williams 2012 and Andreff, 2015). Wilson and Plumley (2017) argue that EPR (and English Rugby League's Super League) suffered financially due to their adopting some but not all elements of US sports leagues. The different approaches may be explained by differences in ownership structures. Following the move to professionalism many top English and French rugby clubs were

[8] As noted, the four Welsh teams have operated a salary cap since 2012/13.

acquired by wealthy individuals. The Irish and Scottish Pro14 teams are essentially subsidiaries of the IRFU and SRU respectively and all their players are centrally contracted. While the Welsh teams were all privately owned prior to the 2017 WRU takeover of the Dragons, they were heavily dependent on WRU funding.

The format of the Pro14 has changed on several occasions. In its first two seasons the league was split into two sections with teams playing a single round robin series against the other teams in their section and the top four from each section qualifying for the knock-out stages. The league switched to a single 12 team division with a double round robin fixture schedule with the top team at the end of the regular season declared champions in 2003/04 following the reduction in the number of Welsh teams. In 2004 the Irish and Scottish teams sought to revert to a single round robin fixture schedule to avoid clashes with international matches. This was rejected by the Welsh teams as they had planned their budgets on the basis of 11 home league matches per season (BBC Sport, 2004). The switch to a two-conference structure following the addition of two South African teams in 2017/18 occurred, in part, because there was no scope to accommodate the extra matches that would have arisen if a single division format had been retained.[9]

A number of the format changes adopted by the Pro14 appear designed to increase attendances and total league revenue. Like most Rugby Union tournaments, the Pro14 awards bonus league points to encourage attacking play and close matches. The introduction of play-offs in 2009/10 was also designed to increase attendances (Massey, 2019). Following the switch to a two-conference structure in 2017/18, the play-offs were expanded from four to six teams while the number of "Derby" matches between teams from the same country was also increased.[10] Another innovation was the decision to play a Welsh derby double header towards the end of the season in the Principality stadium in Cardiff with ticket prices reduced to as little as £10. (Rees, 2016). The composition of the conferences was to be reset each season based upon the previous season's rankings to maintain competitive balance (Pro14, 2017).[11]

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[9] The Pro14 had previously announced plans to move to a two-conference structure in order to reduce fixture clashes with international matches (Thornley, 2016b).
[10] Teams play the other teams in their conference twice and teams in the other conference once. Irish (and Welsh) teams play home and away "Derbies" against their compatriots irrespective of which conference they are in while the Italian, Scottish and South African teams play each other three times.
[11] The conferences were not reset post 2017/18 but were reset after the 2018/19 season.

There have been repeated criticisms of the Pro14 fixture schedule. In 2008/09 there were no matches scheduled for Saturday afternoons for the first half of the season (Rees, 2008). Many of the Irish teams' home matches that season were scheduled for Sunday evenings to satisfy broadcasters' schedules raising concerns about possible negative effects on attendances (Thornley, 2008). In 2016 the league announced that it had decided to abandon Sunday matches in Wales (Thornley, 2016a). The Pro14 has also been criticised for scheduling matches on international match weekends.

5: Potential Conflicts.

The Pro14 is jointly owned by the IRFU, SRU and WRU. This ownership structure may give rise to potential conflicts of interest as Fort (2006) suggests is the case with club run leagues. Each of the shareholder Unions is likely to be concerned with its own teams rather than maximising league revenue and profits. Similarly, conflicts may arise between the Unions' role as governing bodies and team owners (The Scotsman, 2004). The fact that three of the Welsh clubs and one of the Italian teams are privately owned creates further potential conflicts.

The unilateral decisions by both the SRU and WRU to each close one of their Pro14 teams may have been rational from the viewpoint of both Unions. However, these decisions failed to take externalities into account, i.e. reduced fixtures and revenue for the remaining clubs and ignored the mutual interdependence that exists between a league's member clubs. It contrasts with EPR's decision to introduce revenue sharing and salary caps to ensure the viability of all member teams following the failure of two clubs in 1998/99. It may be optimal for a league to include some teams that are not viable as they may increase demand for the stronger teams such that the revenue enhancing effect on the latter group exceeds the losses of the former (Sloane, 1971). Consequently, a club run league might have retained the Borders and Celtic Warriors rather than replace them with two Italian franchises. Ironically the SRU and WRU were reportedly unenthusiastic about retaining the Italian teams (Thornley, 2017b).

The IRFU's clearly stated priority is its international team and it has consistently limited the number of Pro14 matches that Irish international players can play for their teams. This approach has been criticised as detrimental to the league. Howell (2004) claimed that the IRFU "has totally undermined the Celtic League to such a degree the professional tier of four teams in Wales could be put in jeopardy". The WRU expressed similar criticism:

> "The Celtic League is vitally important for rugby in this country. We have to take it seriously and we have to encourage Ireland to take it seriously. If the Celtic League is to go head-to-head with the Zurich Premiership, the Irish Rugby Football Union - in particular - have to get on board." (WRU, 2003/4. p.7).

It was also claimed that the Irish teams did not have to take the Pro14 seriously as they were guaranteed ERC qualification and (Aylwin, 2004 and 2007).

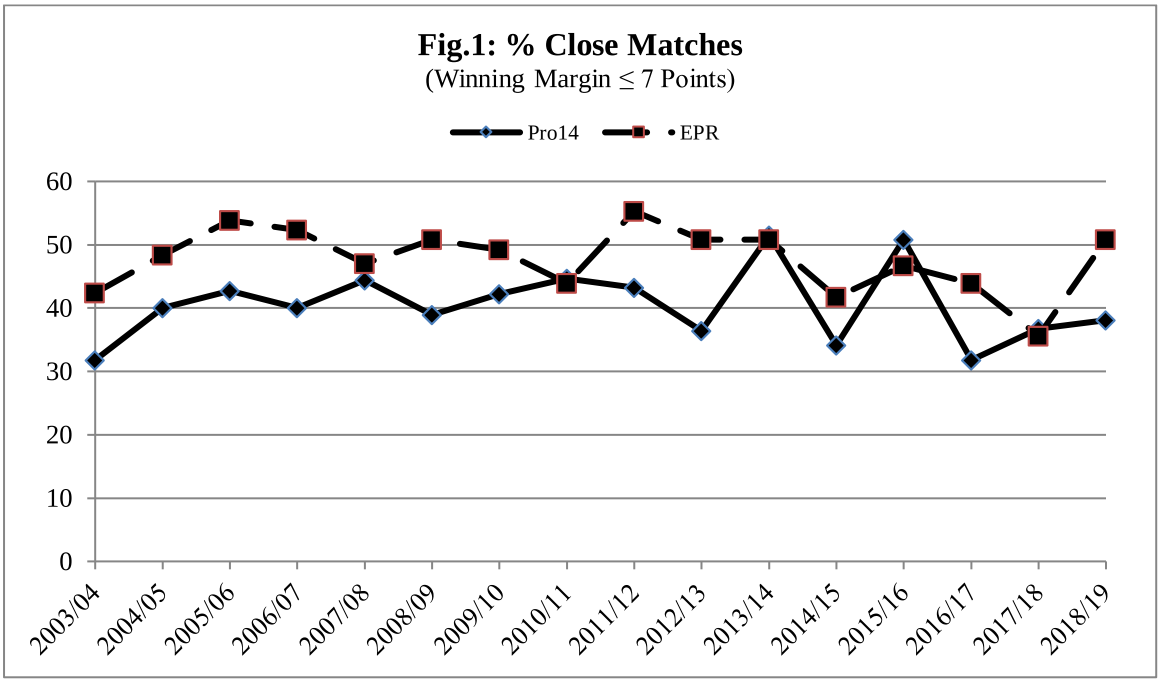
The Welsh clubs were criticised in the past for prioritising Anglo-Welsh cup competitions with EPR clubs over the Pro14 and the IRFU and SRU at one point threatened to expel them (Rees, 2005). There have been concerns that the Welsh clubs might quit the Pro14 to join the EPR (Rees, 2008) fuelled by occasional suggestions that they would prefer an Anglo-Welsh league to the Pro14 (Jones, 2014). At one point, the Welsh clubs held meetings with the EPR to discuss the possibility of switching leagues (Kitson, 2014).

Jones (2014) argues that the Pro14 structure had a negative effect on Welsh teams' performances. Such claims ignore the fact that Welsh rugby was riven by a long-running battle for control between the clubs and the WRU (Rees, 2013 & 2016). The clubs opposed WRU proposals for centralised player contracts for many years before eventually accepting dual contracts for Welsh international players (Verdier, 2014). At one point it was claimed that the WRU "want the regions to go broke so they can take the players over and put an alternative system in place." (Jackson, 2013).

6: Competitive Balance.

As previously noted, it is often claimed that competitive balance in sports leagues is important to maintain fan interest. We now consider evidence on competitive balance in the Pro14.

First, we consider short-run competitive balance. Following Williams (2012) and Hogan and Massey (2018) we use the percentage of matches per season where the winning margin was seven points or less as an indicator of short-run competitive balance. A difference of seven points or less means that the teams were divided by a single score at the end of the match (seven points is the equivalent of a converted try) suggesting that the outcome was uncertain up to the final whistle. The results for the Pro14 and EPR are illustrated in Fig. 1. The EPR claims to be the most balanced rugby league in the world on the basis of having the highest proportion of matches where the winning margin was seven points or less (Hogan & Massey, 2018).



While the number of close matches has traditionally been lower than in EPR, the Pro14 has recorded a relatively high level of short-run balance. Apart from a couple of seasons, approximately 35-45% of Pro14 matches had a winning margin of seven points or less.

The Herfindahl-Hirschman Index (HHI) is a useful measure of long-run competitive balance (Leeds & von Allmen, 2005) and Table 2 illustrates HHIs for championship wins and Top 4 finishes in the Pro14 from 2001/02 to 2018/19. A team's "market share" is defined as the number of championship wins (Top 4 finishes) over the relevant time period. Teams' "market shares" are squared and summed to arrive at the HHI in the normal way.

Table 2: Pro-14 Champions and Top 4 Finishes 2001/02-2018/19.

Team	Country	Champions	Top 4
Leinster	Ireland	6	15
Ospreys	Wales	4	8
Munster	Ireland	3	14
Scarlets	Wales	2	5
Ulster	Ireland	1	10
Glasgow	Scotland	1	9

Connacht	Ireland	1	1
Cardiff	Wales	-	4
Dragons	Wales	-	2
Edinburgh	Scotland	-	2
Celtic Warriors[a]	Wales	-	1
Neath[b]	Wales	-	1
HHI		0.210	0.139

Notes: a The Celtic Warriors only played in the league for one season – 2003/04.
b. In 2003/04 Neath and Swansea merged to form the Ospreys franchise.

In the 18 seasons of the league, seven different teams have won the championship while 12 teams have recorded at least one top four finish. The HHIs are 0.210 for championship wins and 0.139 for Top 4 finishes. The Pro14 thus has a reasonably high degree of long-run balance with no evidence of individual club dominance.

Irish teams have won the League 11 times compared with six wins by Welsh teams and just one Scottish win. Leinster (15), Munster (14) and Ulster (10) have recorded more top 4 finishes than any other team in the league which contradicts claims that the Irish teams do not take the Pro14 seriously.

Table 3 compares ERC performances of the three main European Rugby Union leagues.

Table 3: ERC Performances by League 1995/96-2018/19.

	Pro14	EPR	Top14
Champions	7	10	8
Quarter Finals	63	54	67
% Wins in Group Stages	49.5	56.5	56.1

The table indicates that competition between the three leagues in the ERC is reasonably balanced and that the tournament is not dominated by teams from the larger country leagues unlike soccer's Champions League. EPR teams have won the ERC more often than Top14 and Pro14 teams but have reached fewer quarter finals than teams from the other two leagues.

Table 4 provides details of the performances of the individual Pro14 countries in the ERC. The data is split into periods before and after 2003/04 for the Irish. Scottish and Welsh teams as this coincides with a major restructuring of the league. In the case of the Italian teams we consider performance before and after 2010/11 when they joined the league.

Table 4: Pro14 Teams' ERC Performances 1995/96-2018/19.

	Country	1995/96-2002/03	2003/04-2018/19	1995/96-2018/19
Champions	Ireland	1	6	7
	Wales	0	0	0
	Scotland	0	0	0
Quarter Finals	Ireland	8	30	38
	Wales	11	9	20
	Scotland	0	5	5
% Wins in Pool Stages	Ireland	56.3	66.0	63.1
	Wales	46.6	44.2	45.2
	Scotland	31.1	34.9	33.5
		1995/96-2009/10	2010/11-2018/19	1995/96-2018/19
	Italy	12.1	6.3	10.4

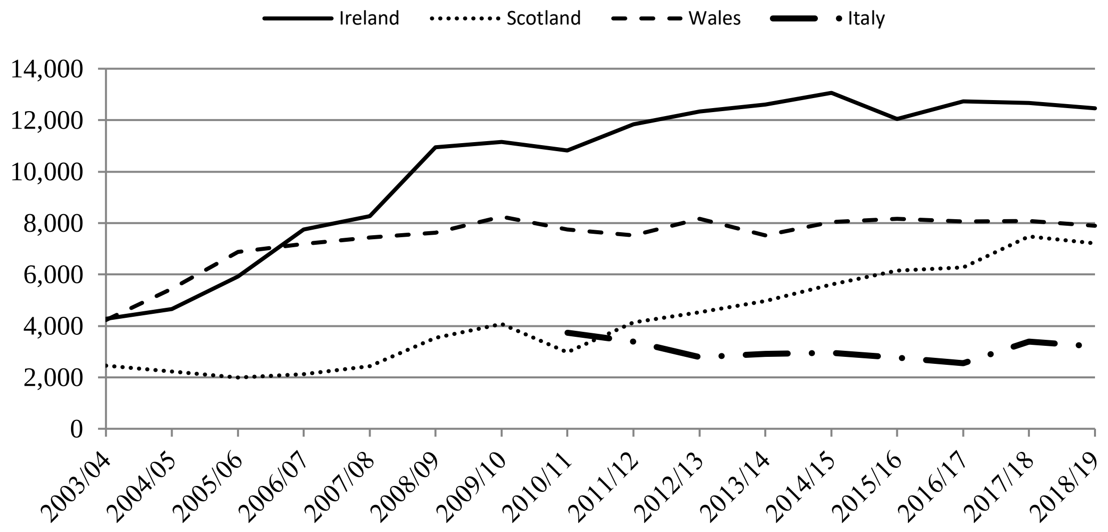
Irish teams have performed better than other Pro14 teams accounting for all seven Pro14 ERC wins while Irish teams have made 38 quarter-final appearances compared with 20 by Welsh teams and five by Scottish teams. The Irish teams' performances improved post 2003/04 following their transition from representative teams which played a limited number of matches per season to fully professional franchises. In contrast, despite a reduction in the number of Welsh teams from nine to four their performances declined post 2003/04. Participation in the Pro14 has so far failed to improve Italian teams' ERC performances.

7: Attendances.

Attendances represent a significant source of revenue in rugby (Owen & Weatherston, 2004). Fig. 2 shows trends in Pro14 attendances by country from 2003/04 to 2018/19.[12]

[12] We exclude the first two seasons as teams only played 3/4 home league matches in those years.

Fig.2: Average Pro14 Attendances by Country



Source: http://rd.pro12rugby.com/matchcentre

Irish teams' attendances have increased significantly since 2003/04 and averaged almost 13,000 in 2018/19. This was in line with attendances at several EPR and Top14 clubs and was significantly higher than in the other Pro14 countries. Welsh teams' attendances have remained stuck around 8,000 for the past decade, despite the fact that rugby was traditionally seen as Wales' national sport (Collins, 2015) whereas it was a minority sport in Ireland (IRFU, 2009). Long running disputes between the WRU and the Welsh clubs may partly explain why the Pro14 "remains a particularly hard competition to sell in Wales" (Thornley, 2016a). A lack of supporter buy-in to the regional structure has also contributed (Howell, 2012).

Average Scottish attendances have increased significantly since 2010/11 reaching almost 7,500 in 2017/18 just below the average in Wales. Having fallen for most of the period since 2010/11, average Italian attendances in 2018/19 were 3,200.

Previous studies found that match attendances in the three main European Rugby Union leagues were largely dependent on the strength of the home team and its chances of winning the league or reaching the playoffs. (Hogan, Massey & Massey 2013) Similar results have been reported for other sports leagues. (Szymanski, 2001; Szymanski, 2007; and Coates & Humphreys, 2010). The higher average attendances of the Irish teams may be because they have enjoyed more success than their Welsh and Scottish counterparts in the Pro14 and ERC.

In order to identify the determinants of attendances and to quantify the effects of various policy measures, we carried out an econometric analysis using attendance data for 1,948 Pro14 matches played between 2003/04 and 2018/19. The model variables are described in Table 5.

Table 5: Variable Descriptions.

Variable	Definition	Mean (Standard Deviation)
Attendance	Match Attendance	7241.6 (5837.1)
Home Win Ratio	Home team % wins previous 6 matches.	0.488 (0.246)
Away Win Ratio	Away team % wins previous 6 matches.	0.513 (0.248)
Home Qualification	Home team's chances of winning league / reaching playoffs (0 if cannot win/qualify).	0.779 (0.428)
Away Qualification	Away team's chances of winning league / reaching playoffs. (0 if cannot win/qualify)	0.795 (0.424)
Derby	Both teams from same country (1 = yes, 0 = no).	0.240 (0.427)
Broadcast Live	Match broadcast live on TV (1 = yes, 0 = no).	0.780 (0.415)
Home International	Home team country playing international match on same weekend (1 = yes, 0 = no).	0.273 (0.446)
Away International	Away team country playing international match on same weekend (1 = yes, 0 = no).	0.274 (0.446)
Home Pro 14 Champs	Home team won league previous season. (1 = yes, 0 = no).	0.0847 (0.279)
Home ERC Champs	Home team won ERC previous season. (1 = yes, 0 = no).	0.0313 (0.174)
Away Pro 14 Champs	Away team won league previous season. (1 = yes, 0 = no).	0.0852 (0.279)
Away ERC Champs	Away team won ERC previous season.	0.0308

	(1 = yes, 0 = no).	(0.173)
Friday	Match played on Friday (1 = yes, 0 = no).	0.458 (0.498)
Mid-Week	Match played Monday-Thursday. (1 = yes, 0 = no).	0.0205 (0.142)
Sunday	Match played on Sunday (1 = yes, 0 = no).	0.0950 (0.293)
Xmas	Match played between 26 December and 2 January. (1 = yes, 0 = no).	0.0657 (0.248)
Soccer Competition	Top tier soccer club in home team city. All seasons for Glasgow and all except 2014/5 for Edinburgh. Seasons when Cardiff City and Swansea City in English Premier League for Cardiff and Ospreys.	0.243 (0.429)
Salary cap	Salary cap applied (Welsh teams only). (1 = yes, 0 = no).	0.156 (0.363)
Play-offs	Champions decided by play-off. (1 = yes, 0 = no).	0.671 (0.470)

The results are shown in Table 6. As the dependent variable is in logs but the independent variables are in levels, the coefficients are semi-elasticities.[13] The first column shows a basic analysis.[14] As can be seen, attendance is positively affected by team quality as measured by teams' win ratios in their previous six matches. A home team with a perfect win record (win ratio of one) will attract an attendance 76% higher than a home team with a zero-win ratio. The away team's ratio matters much less than the home team's, but both are statically significant.

A strong away team adds 13% to attendances, which is significant. This would imply that restructuring conferences so as to have more matches between stronger teams is likely to positively affect attendances, justifying the Pro14 decision to restructure the conferences every 2 years.

[13] Formally we can reject normality of the Attendance variable with p-value<1e-4 and cannot reject the normality of the log variable with a p-value of 0.6.
[14] We also estimated a tobit model to account for the possibility that attendance may be capacity constrained. The coefficients were almost identical to the OLS model and so are not reported here but are available upon request.

The chance that the home team is in contention to win the league and/or qualify for the playoffs also has a significant positive effect on attendance. Interestingly, the chance that the away team may qualify has no impact on attendances. Derby games also attract higher attendances – 43% more than non-derby matches, confirming the importance of such matches for generating revenue. Broadcasting matches live also increases attendances by about 32%. The introduction of play-offs in 2009/10 has also had a positive impact on attendances as predicted.

We also included country fixed effects for home and away teams but the results merely confirmed the analysis of Figure 2 and are not included here.[15]

The second column of Table 6 adds a trend variable in order to capture the secular increase in average attendance over time (see Figure 2). We also interact the trend with the country effects i.e. allow the country effects change through time. Once again these effects confirm the analysis of Figure 2 with attendance at Irish home games growing at a higher rate than other countries. More importantly, the inclusion of these time and country fixed effects makes no difference to the other variables' coefficients apart from the playoff variable, which declines in magnitude but remains statistically significant.[16]

The third column of table 6 looks at the impact of various measures discussed previously on attendances. These variables are mostly significant and with the expected sign, for the home team but are insignificant for the away team.[17]

Attendances at matches played on Sunday were 14% lower than for Saturday matches vindicating the decision to move away from Sunday matches. Friday night matches also attract lower attendances than Saturdays although the magnitude was far less than for Sunday matches.[18] Games played over the Christmas/New Year period also enjoy higher attendances.

There has been criticism that scheduling Pro14 matches on international match weekends

[15] The results are available from the authors on request.
[16] The full detailed results are available on request. We can reject the null hypothesis that interaction effects are equal across countries at the 1% significance level.
[17] We were unable to test the effect of bonus points as the Pro14 has had bonus points for the entire period since 2003/04.
[18] Mid-week matches also attracted lower attendances than Saturdays although our sample involves very few mid-week matches and the result was statistically insignificant.

negatively affects attendances. Fans may prefer to attend the international match or stay away because their teams' best players are playing for their country. Indeed, we find that the effect for the home team is (just) statistically significant but statistically insignificant for the away team. The presence of a salary cap on the home team had a significant negative impact on attendances. Although as the cap was limited to Welsh teams from 2012, the effect is statistically significant when controlled for the Welsh fixed effect. We also find that the home team winning the league or the ERC has significant positive effects on its attendances the following season, whereas the corresponding effects for the away team were smaller in magnitude and of borderline significance. Perhaps surprisingly, the presence of high-quality competition for fans attention in the form of a top-tier soccer club in the same city had no statistically significant impact on attendances.

Table 5: The Determinants of Pro 14 (Log) Attendances

	(1)	(2)	(3)
Home Win Ratio	0.763***	0.728***	0.668***
	(0.0521)	(0.0507)	(0.0493)
Away Win Ratio	0.127*	0.122*	0.142**
	(0.0506)	(0.0487)	(0.0476)
Home Qualification	0.0757*	0.0564	0.0397
	(0.0306)	(0.0299)	(0.0293)
Away Qualification	-0.0342	-0.0279	-0.0397
	(0.0341)	(0.0309)	(0.0307)
Derby	0.427***	0.437***	0.335***
	(0.0278)	(0.0275)	(0.0310)
Broadcast Live	0.320***	0.263***	0.233***
	(0.0295)	(0.0292)	(0.0278)
Playoffs	0.413***	0.139**	0.144**
	(0.0273)	(0.0495)	(0.0463)
Home Team Irish	0.839***	-0.175	-0.231
	(0.0421)	(0.151)	(0.139)
Home Team Scottish	0.230***	-0.825***	-0.856***
	(0.0397)	(0.148)	(0.138)
Home Team Welsh	0.722***	-0.0112	-0.0554
	(0.0351)	(0.147)	(0.137)
Home Team SA	0.313***	2.133	2.040
	(0.0742)	(1.544)	(1.538)
Away Team Irish	-0.0520	-0.105	-0.0732
	(0.0378)	(0.162)	(0.160)
Away Team Scottish	-0.0242	-0.147	-0.0991
	(0.0406)	(0.165)	(0.162)
Away Team Welsh	-0.0385	-0.147	-0.104
	(0.0380)	(0.163)	(0.160)
Away Team SA	-0.0901	1.732	1.951
	(0.0549)	(1.028)	(1.244)

Trend	-0.0489***	-0.0451**
	(0.0143)	(0.0141)
Home Team Irish*Trend	0.0872***	0.0874***
	(0.0114)	(0.0106)
Home Team Scottish*Trend	0.0916***	0.0909***
	(0.0115)	(0.0107)
Home Team Welsh*Trend	0.0560***	0.0688***
	(0.0113)	(0.0116)
Home Team SA*Trend	-0.104	-0.0986
	(0.0958)	(0.0955)
Away Team Irish*Trend	0.00504	0.00227
	(0.0125)	(0.0127)
Away Team Scottish*Trend	0.0126	0.00748
	(0.0129)	(0.0131)
Away Team Welsh*Trend	0.0109	0.00737
	(0.0126)	(0.0127)
Away Team SA*Trend	-0.115	-0.130
	(0.0643)	(0.0784)
Home International		-0.159*
		(0.0621)
Away International		0.0224
		(0.0618)
Home Pro 14 Champs		0.260***
		(0.0365)
Home ERC Champs		0.463***
		(0.0585)
Away Pro 14 Champs		0.0733*
		(0.0368)
Away ERC Champs		0.0846
		(0.0582)
Friday		-0.0362
		(0.0224)
Mid-Week		-0.0435
		(0.0618)

Sunday			-0.142^{***}
			(0.0364)
Xmas			0.202^{***}
			(0.0483)
Soccer Competition			0.0377
			(0.0329)
Salary cap			-0.156^{**}
			(0.0504)
Constant	6.987^{***}	7.917^{***}	7.986^{***}
	(0.0545)	(0.204)	(0.195)
R^2	0.595	0.620	0.660
Observations	1948	1948	1948

White corrected standard errors in parentheses.
* p<.1, **p<.05, ***p<.01

8: Broadcasting.

Pro14 broadcast revenue was traditionally significantly lower than that of the other two main European rugby leagues mainly because broadcast markets in Ireland, Scotland and Wales are much smaller than in England and France. In the past the Pro14 struggled to secure broadcast contracts in Scotland, where broadcasters believed that there was limited demand for live broadcasts of rugby matches apart from internationals (SRU, 2010), and Italy. Prior to 2018/19 Pro14 coverage was scattered between several national broadcasters who tended to concentrate on their own local teams, with scattered kick-offs times and no highlights package of all of the weekend's matches which did not facilitate the creation of a coherent narrative (Thornley, 2016b).

In 2014, the Pro14 benefited indirectly from competition between UK Pay-TV broadcasters when Sky decided to broadcast Pro14 matches to fill a gap in its rugby coverage arising from losing EPR rights to rival pay-TV operator BT. The Sky deal combined with Guinness becoming the league's main sponsor enhanced the status of the Pro14 (Rees, 2014b).

Despite the Sky deal, it was estimated that Pro14 broadcast income in 2016/17 amounted to just €15m. The addition of 2 South African teams in 2017/18 was reported to have almost doubled Pro14 broadcast revenue, although it still lagged behind the EPR and Top14 which had broadcast revenues of €46 million and €71 million respectively (Massey, 2019). In April 2018, Pro14 announced a new deal with Premier Sports for the live broadcast of all Pro14 matches which it claimed would double clubs' broadcast revenue (BBC News, 2018).

9: Conclusions.

The Pro14 has struggled financially for much of its history with several team failures. This was due to low match attendances, except for the Irish teams, combined with limited broadcast revenues and lack of sponsorship in the league's early years. Thus. measures to address these issues are arguably critical to the future of the league and its member teams. Measures such as reducing the number of Sunday matches and the introduction of play-offs have increased attendances. Further reducing fixture clashes with international match weekends would boost attendances, but given rugby's crowded fixture calendar, the scope for this may be limited.

The Pro14 has increased broadcast revenue largely through geographic expansion into larger broadcast markets, notably through the addition of two South African teams with reported plans for further expansion. The South African expansion has been a financial success, although there have been significant logistical problems which would need to be address prior to any further expansion (Thornley, 2018). The 2018 broadcast contract with Premier TV significantly increased and has placed the Pro14 on a more secure financial footing and significantly closed the financial gap with EPR and the Top14 emphasising the importance of broadcast revenues and geographic expansion for the league's ongoing viability.

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