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RUGBY’S CELTIC FRINGE GOES GLOBAL – AN ECONOMIC ANALYSIS OF THE PRO14

Abstract

Purpose – The introduction of professionalism in Rugby Union in 1995 posed serious challenges for the sport in Ireland, Scotland and Wales given their limited fan base and broadcast markets. It led to the creation of a new league, the Pro14, comprising teams from all three countries. The paper seeks to extend the knowledge base on professional team sports by analysing the performance of the Pro14 and to derive lessons for management of professional sports leagues in small countries.

Design/methodology/approach – We analyse Pro14 performance using a range of metrics including attendances, competitive balance, team performances within the league and in European competitions. We also analyse the limited financial data available for Pro14 teams.

Findings – The Pro14 has increased attendances by specific policies and Pro14 teams have competed successfully at European level. There have been several financial failures and the franchises all depend on financial support from their national governing bodies. Given that English and French teams have also struggled financially, rugby may need to introduce financial fair play rules similar to soccer.

Originality/value – The paper contributes to the academic discussion on professional team sports, particularly Rugby Union. The paper has implications for Pro14 clubs and league organisers, particularly with reference to competition design. It may also have lessons for European soccer where some have suggested that mergers of smaller country leagues could reduce the dominance of larger country leagues.

Keywords

Management, Performance measurement, Rugby Union, Financial Performance, Sport finance, Structure of professional team sports

JEL Codes: Z20; Z23; D24.

1: Introduction.

In November 1995 Rugby Union abolished its century old ban on professionalism. The decision to permit payments to players had significant economic implications for the sport and for individual clubs. Previous studies have shown that many English and French clubs experienced serious financial problems following the introduction of professionalism (McMillan, 1997; Andreff, 2015; and Wilson & Plumley, 2017). Rugby Union's adoption of professionalism posed particular problems for the sport in Ireland, Scotland, and Wales due to their smaller fan bases and broadcast markets. The Irish, Scottish and Welsh Rugby Unions (IRFU, SRU and WRU) responded by establishing a new league comprising teams from all three countries. The league, originally known as the Celtic League was renamed on several occasions and is referred to in the current paper as the Pro14, the name under which it operated from 2017/18 to 2020/21. [1] [The Pro14 is one of the three main European Rugby Union leagues along with English Premiership Rugby and the French Top14.](#)

The Pro14 is of interest for four reasons. First, it may offer lessons for European soccer as it has been argued that mergers of smaller country leagues could address growing imbalances both within and between leagues (Szymanski, 2009; Peeters, 2011). Second, [the success of a league and its viability depend on its ability to attract supporters and generate broadcast revenue. Leagues may seek to increase attendances through changes to league structures and fixture schedules \(Dobson *et al.*, 2001\) and we conduct an econometric analysis of the impact of various policy changes on Pro14 attendances.](#) ~~Third, the success of a league and its viability depend on its ability to attract supporters and generate broadcast revenue. Leagues may seek to increase attendances through changes to league structures and fixture schedules (Dobson *et al.*, 2001) and we conduct an econometric analysis of the impact of various policy changes on Pro14 attendances.~~ [Third,](#) the Pro14 strategy of geographic expansion through the addition of Italian and South African teams may offer lessons for other leagues, notably Rugby League's Super League Europe (SLE) where a similar strategy has been unsuccessful (Wilson, Plumley & Barrett, 2015). ~~Third, the success of a league and its viability depend on its ability to attract supporters and generate broadcast revenue. Leagues may seek to increase attendances through changes to league structures and fixture schedules (Dobson *et al.*, 2001) and we conduct an econometric analysis of the impact of various policy changes on Pro14 attendances.~~ Fourth, the Pro14's unusual ownership structure - it is jointly owned by the IRFU, SRU and WRU may provide further insights into league governance structures. [2]

Our main findings can be summarised as follows. The Pro14 has been reasonably successful despite some serious problems. Pro14 teams have competed successfully in European

competitions against ~~English Premiership Rugby (EPR)~~ and ~~French Top14~~ teamsides offering some support for claims that mergers of smaller country leagues may improve competitive balance in European tournaments. ~~The Pro14~~ has increased revenue through specific policies that grew attendances and increased broadcast income through geographic expansion. Several Pro14 teams have, nevertheless, gone out of business and the majority of franchises depend on funding from their national Unions. ~~The~~ Financial performance of Pro14 teams is a critical issue because the success of a sports league depends on having a sufficient number of financially viable teams (Williams, 2012). Several EPR (Wilson & Plumley, 2017) and Top14 (Andreff, 2015) teams have also struggled financially suggesting that European rugby may need to follow soccer's example and introduce financial fair play rules.

The paper is structured as follows. Section 2 provides a brief history of the Pro14. The economic characteristics of sports leagues are summarised briefly in section 3. Evidence on competitive balance within the Pro14 and between it and the other two main European leagues is considered in section 4. Section 5 analyses attendances and explicitly tests the hypotheses that ~~league policies and~~ competitive balance and league policies affect attendance. Trends in broadcast income and overall financial performance are considered in sections 6 and 7, respectively. The issue of potential conflicts of interest arising from the Pro14's governance structure and their implications are considered in Section 8. Some conclusions are offered in section 9.

2: The Pro14 – A Brief History. [3]

During the amateur era, rugby fans' main focus was on international matches and club leagues were far less important than in soccer (Massey, 2019). Since 1947, teams representing the four provincial branches of the IRFU had competed in an annual inter-provincial championship with a single round-robin fixture schedule. Its main purpose was to serve as a series of trials for the international teams. 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.

When the European Rugby Cup (ERC) was introduced in 1995, the IRFU entered three of its provincial representative teams rather than club teams (Thornley, 2017). The SRU subsequently entered its district teams the following year. [4]

Following the introduction of professionalism, the IRFU (and SRU) adopted a vertically integrated structure whereby the existing provincial/regional teams were transformed into professional franchises with players who were centrally contracted to the two Unions, although the SRU was forced to close two of its teams three years after the introduction of professionalism.

In Wales, the Welsh Premier League (WPL) clubs continued as before, but a bitter battle ensued between them and the WRU for long-term control of the game (Massey, 2019). .

~~In 1998/99, two Scottish regional teams joined the WPL which was renamed the Welsh-Scottish League.~~ In 2001/02 the IRFU, SRU and WRU established the Celtic League, with fifteen teams - nine WPL teams, four Irish provincial teams and the two remaining Scottish districts. This move signalled an implicit recognition that individual national professional leagues were not viable. [5]

~~The league has undergone several format changes, primarily driven by changes in the number of participating teams.~~ Originally teams were divided into two sections and played a single round-robin series against the other teams in their section with the top four from each section qualifying for the knock-out phase. It switched to a single division of 12 teams in 2003/04 with a double round-robin fixture schedule, following a restructuring of the Welsh teams. This marked a transition to a fully-fledged league structure. From 2003/04 to 2008/09 the champions were the top team at the end of the regular season. Play-offs to determine the championship were introduced in 2009/10.

Team closures reduced the league to ten -teams in 2007/08 and posed a potential existential challenge. The league responded by increasing team numbers through geographic expansion. Attempts to recruit London Irish and London Welsh from the EPR proved unsuccessful (Rees, 2006). In 2010/11 the league added two Italian teams, although plans for a Rome based franchise failed to materialise.

In 2017/18 the league was renamed the Pro14 following the addition of two South African teams, a move described as *“the first phase of expansion as the Guinness PRO14 becomes a truly global tournament”* (Pro14, 2017). While the South African sides had to sit out the 2020/21 season due to the coronavirus disease 2019 (Covid-19) pandemic, the number of South

African teams increased to four in 2021/22. The Pro14 adopted a two-conference structure following its South African expansion, to avoid increased fixture clashes with international matches and the play-offs were expanded from four to six teams.

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

Table 1 near here.

3: Economics of Sports Leagues.

Professional team sports are characterised by a high level of interdependence between teams since it is only through cooperation that they can produce a league championship competition (Rottenberg, 1956; Neale, 1964). League championship competitions 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).

Competitive balance/uncertainty of outcome has long been considered important for maintaining supporter interest in sports leagues (Rottenberg, 1956; Neale, 1964; Fort & Quirk, 1995, Borland & MacDonald, 2003, Budzinski & Pawlowski, 2017). MacDonald and Booth (2007) note that many sports leagues pursue competitive balance, presumably because they believe that it will result in increased revenue. It has also been suggested, however, that supporters who attend matches are more interested in seeing a home win rather than a close match, whereas television audiences are more interested in balanced contests (Szymanski, 2001; Alavy *et al.*, 2010). More recently competitive balance has been viewed as one of several factors which influence demand (Read *et al.*, 2021). The level of competitive balance within a league may therefore constitute one measure of league success and ~~for this reason~~ we therefore consider evidence on competitive balance in the Pro14 in section 4.

Palomino and Sakovics (2004) argue that the European Court of Justice (ECJ) judgment in the Bosman [6] case has generated competition between European soccer (and rugby) leagues to attract the best players since, by improving league quality in this way, leagues can secure higher revenues for their broadcast rights, as the improvement in quality more than offsets any decline in competitive balance. Several authors have argued that competitive balance has declined both

within and between European soccer leagues (Szymanski, 2007; Vrooman, 2007; Pawlowski, Brewer & Hovemann, 2010). Mergers of smaller country leagues, something which is prohibited under FIFA rules, have been suggested as a means of reducing such imbalances (Szymanski, 2009) by expanding the target market and improving drawing power; (Peeters, 2011). The performances of Pro14 teams in the ERC is considered to see if it supports such arguments.

~~We then go on to test the following related hypotheses in Section 5:~~

~~H1: Short run competitive balance has a positive effect on match attendance.~~

~~H2: Team quality has a positive effect on match attendance.~~

~~H3: Medium Term uncertainty has a positive effect on attendance.~~

The success of a league and its viability depend on its ability to attract supporters and generate broadcast revenue. League design has significant financial implications for leagues and their member clubs (Szymanski, 2003). League structures and fixture schedules may affect match attendances for all clubs or for particular groups of clubs because they affect the attractiveness of fixtures (Dobson *et al.*, 2001).

Leagues often tailor fixture schedules to increase the number of attractive matches. Soccer's Scottish Premier League divides teams into two groups of six after 33 matches and teams play their final five matches against the other teams in their group resulting in greater demand than if the final five rounds were scheduled randomly (Lenten, 2008). 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). SLE's fixture schedule includes a full round of matches involving all teams which are held at a single venue over the space of a weekend ("Magic Weekend") while the Pro14 schedule includes a double-header of matches between the four Welsh teams ("Judgement Day"). Play-offs to determine the championship increase the number of regular season matches that have championship significance leading to higher attendances (Fort & Quirk, 1995; Williams, 2012).

In section 5 we employ an econometric model to test a number of ~~then go on to test the following related hypotheses in relation to match attendances~~ Section 5:

H1: Short run competitive balance has a positive effect on match attendance.

H2: Team quality has a positive effect on match attendance.

H3: Medium Term uncertainty has a positive effect on attendance.

~~We test the following hypotheses in order to assess the impact of league design on attendances:~~

H4: Matches between geographically close teams have higher attendance.

H5: Playoffs increase regular season match attendances.

H6: Attendances are affected by the day of the week on which a match is played.

H7: Attendances are likely to be lower for matches that clash with international matches.

Changes to playing rules may ~~also~~ be designed to make matches more attractive to fans. Rugby League changed its rules to promote higher scoring and reduced stoppages in the face of a growing challenge from soccer in the early years of the 20th century (Read et al. 2021). In the 1980s English first-class cricket introduced rule changes to reduce the likelihood of draws, increase scoring rates and reduce time wasting (Schofield, 1982). In soccer the number of points awarded for a win was increased from 2 to 3 to encourage more attacking play (Hon & Parinduri, 2016). 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)-, presumably in the belief that this makes matches more attractive to fans. We are unable to test the hypotheses that bonus points increase attendances because, apart from its first two seasons when teams only played 6/7 matches, the Pro14 has always had bonus points

Historically many sports leagues opposed live broadcasts of matches due to concerns that it would have an adverse effect on attendances (Szymanski, 2006; Dobson & Goddard, 2011). Cairns et al. (1986) point out that there is little empirical support for the claim that live broadcasts negatively affect attendances. ~~while~~ Szymanski (2009) claims that such concerns underestimated the power of television ~~to~~ market the product, make it more attractive to consumers, and increase attendances over time. We therefore also test whether live broadcasts have affected Pro14 match attendances (H8).

Competition between broadcasters for sports content combined with changes in broadcast technology has greatly increased broadcast revenue in many sports over the past 30 years and broadcasting is now the main source of revenue for many sports. This highlights the need for sports leagues to produce a coherent package for broadcasters (Szymanski, 2009). We thus compare the performance of the Pro14 in attracting broadcast revenue with that of the EPR and Top14.

~~Palomino and Sakovics (2004) argue that The decision of the European Court of Justice (ECJ) judgment in the Bosman [7] case has generated competition between European soccer (and rugby) leagues to attract the best players since, by improving league quality in this way, leagues can secure higher revenues for their broadcast rights, as the improvement in quality more than offsets any decline in competitive balance. Palomino & Sakovics, 2004).~~

4: Competitive Balance.

Within league balance is widely considered important for maintaining supporter interest (Rottenberg, 1956; Neale, 1964; Fort & Quirk, 1995, Borland and MacDonald, 2003, Budzinski & Pawlowski, 2017) and for attracting television audiences (Alavy *et al.*, 2010). Pro14 performances in the ERC are of interest in light of claims that mergers of smaller country leagues may improve competitive balance in European soccer (Szymanski and Peeters 2011).

The sports economics literature defines three types of competitive balance.

- Short-run uncertainty - uncertainty regarding the outcome of an individual match which should increase supporter interest in individual matches.
- Medium term or seasonal uncertainty - uncertainty over which team will ultimately win the league, which should serve to maintain supporter interest in matches involving a wider range of teams over the course of the season; and
- Long term or dynamic uncertainty - a lack of domination by one or more clubs over several seasons (Cairns, Jennett & Sloane 1986).

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. Seven points is equivalent to a converted try so a difference of seven points or less means that the teams were divided by a single score at the end of the match

suggesting that the outcome was uncertain up to the final whistle. Figure 1 ~~illustrates~~ compares the number of close matches in the EPR, Pro14 and Top14EPR. The EPR ~~latter~~ claimed to be the most balanced rugby league in the world, on the basis that the proportion of matches with a winning margin of seven points or less was higher than in any other rugby league (Hogan & Massey, 2018).

Figure 1 near here.

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 decision to introduce play-offs in 2009/10 to decide the league champions can be viewed as a measure designed to increase medium term or seasonal uncertainty. In section 5, we formally test whether the decision had a significant impact on attendances.

Table 2 gives details of the number of Championships and top four finishes of Pro14 teams. In 20 seasons, seven different teams have won the championship while 12 teams have recorded at least one top four finish.

Table 2 near here.

Irish teams have won the Pro14 13 times compared with six wins by Welsh teams and just one Scottish win. Three Irish teams Leinster (17), Munster (16) and Ulster (12) have recorded more top four finishes than any other team in the league. There is evidence, however, of a decline in dynamic balance in the Pro14 in recent years. Irish team Leinster have won the title for the past four seasons while Irish teams have recorded twelve top four finishes compared with three by the Scottish teams and only one by a Welsh team over that period. No Italian team has finished in the Top 4.

The Herfindahl-Hirschman Index (HHI) is a useful measure of long-run dynamic competitive balance (Leeds & von Allmen, 2005). Table 2 also includes HHIs for championship wins and Top 4 finishes in the Pro14 from 2001/02 to 2020/21. 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.

Table 3 compares championship HHIs for the EPR, Pro14, Top14, the ERC, English soccer's Premier League and the NFL. The latter is generally regarded as one of the most balanced sports leagues in the world. The Premier League and Pro14 are more dynamically unbalanced than the other leagues in the table.

Table 3 near here.

Table 4 compares performances of the three main European leagues in the ERC.

Table 4 near here.

The table indicates that Pro14 teams have competed successfully against EPR and Top14 teams in the ERC winning the competition seven times compared with 11 EPR wins and eight Top14 wins. EPR teams have reached fewer quarter finals than teams from the other two leagues.

Table 5 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 Pro14. In the case of the Italian teams, we consider performance before and after 2010/11 when they joined the league.

Table 5 near here.

Irish teams have performed better than other Pro14 teams, accounting for all seven Pro14 ERC wins. Irish teams have made 40 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 playing a limited number of matches per season to fully professional franchises. Six of the seven Irish ERC wins occurred since 2003/04. Irish teams reached the quarter finals eight times in eight seasons pre 2003/04 compared with 32 quarter-final appearances in the 17 seasons since, while their win ratio in group (pool) stage matches increased from 55% to 66%. In contrast, Welsh teams recorded 11 quarter final appearances in the first eight seasons but only nine in the following 17 seasons, while their win ratio in the

pool stages has declined from 45% to 40%. Scottish teams have also recorded some improvement in performance. Italian teams win ratios in ERC pool stage matches have fallen from 13% to 6% since they joined the Pro14.

5: Attendances.

Owen and Weatherstone (2004) suggest that attendances represent a significant source of revenue in rugby. Wilson and Plumley (2017) state that ticket sales represent the main source of income for EPR clubs. Attendances are likely to be an important source of revenue for Pro14 clubs as broadcast revenue has traditionally been much lower than in the EPR and Top14 (see section 6 below).

Figure 2 shows trends in Pro14 attendances by country from 2003/04 to 2018/19. 

Figure2 near here.

Irish teams' attendances have increased significantly since 2003/04 and averaged 12,500 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 around 8,000 since 2009/10, despite rugby traditionally being considered Wales's national sport (Collins, 2015) and a minority sport in Ireland (Massey, 2019). Average Scottish attendances have increased significantly since 2010/11 reaching almost 7,500 in 2017/18, although this is still well below the 10,000-target set by the SRU (2012). Average Italian attendances in 2018/19 were 3,200.

We estimate a formal econometric model in order to obtain further insights into the determinants of Pro14 attendances in order to formally test the hypotheses which were outlined in Section 3. Our objective is to identify factors which may influence attendance that are under the control of league authorities.

Following Szymanski, 2001; and Coates & Humphreys, 2010, we estimate equation (1) where attendance at match between home (h) and away team (a) at time t (A_{aht}) is a function of competitive balance (CB_t), team quality (Q_h, Q_a) and variables that reflect the context in which the game is played (Policy)

$$(1) A_{\text{hat}} = f(\text{CB}_t, Q_h, Q_a, \text{Policy}_t)$$

We obtained data on match attendances, results, and broadcast details for 1,950 Pro14 matches from 2003/04 to 2018/19. [9] Our regressions explain between 50-60% of the variation of attendances across games.

We measure short term competitive balance using the absolute difference in historical win ratios. The level of the home and away team win ratios over the previous six matches are used as proxies for team quality. A measure of the likelihood of teams winning the league (pre 2009/10) or reaching the play-offs prior to each match serves as a proxy for seasonal uncertainty (medium term competitive balance). [11] Previous studies found that 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 play-offs (Hogan, Massey & Massey, 2013). Similar results have been reported for other sports leagues (Szymanski, 2001; and Coates & Humphreys, 2010). The rest of the variables are dummy variables reflecting team characteristics and/or policy decisions of interest that affect the context in which the game is played. The policy variables are of particular interest as they suggest ways in which attendance (and therefore revenue) can be influenced by the league authorities.

Table 6 near here.

Summary statistics and variable definitions are outlined in Table 6 and Table 7 shows the OLS results. [12] The attendance data decisively rejects normality of the attendance variable but fails to reject the normality of its (natural) log. [13] As the independent variables are in levels, the coefficients are semi-elasticities and are most easily thought of as giving the percentage increase in attendance for a one unit change in the independent variable, other things being equal.

The first column shows a baseline analysis which provides a test of our first three hypotheses. We regress log attendance on our measures of short- and medium run competitive balance and team quality as described above. We include country fixed effects to capture the differing influence national rugby unions have on their franchises and a time trend interacted

with the country effects. In the interest of space we do not present the estimated fixed effects as they merely replicate the country specific trends in Figure 2. It should also be noted that the inclusion of country specific fixed effects and time trends leads to multicollinearity with variance inflation factors much greater than 10. However, their exclusion does not affect the coefficients of interest by a statistically significant amount. Furthermore, a Wald test strongly rejects their exclusion (p value <0.000). For that reason, we present the results with trends included. The results without the collinear variables are available on request.

Our results support H1 and we can reject the null that short-run balance has a zero impact on attendance (p-value 0.0155). An unbalanced match, with a higher difference in win ratios will produce lower attendance. Other things being equal, an extremely unbalanced match (one between a team that has won its previous six matches and a team that has lost all six) will have an attendance 12% less than a match between two teams with equal win ratios.

We can also reject the null hypothesis (H2) that team quality has no effect on attendance for both the home (p-value <0.0000) and away team (p-value 0.0028). Interestingly the magnitude of this effect is much greater than absolute difference in win ratios. In order to evaluate the size of this effect, consider the difference between a match where a home team has won all six previous matches and one where home team has lost all six. Assuming that the match with the losing team would have the sample average attendance (7,241), then the match with the winning team would have attendance of 12,744. The effect for the away team is similar although one-fifth the size, presumably because away team supporters have to travel further. Thus, while match uncertainty matters, team quality matters much more.

Table 7 near here.

Medium-term uncertainty -also has a significant positive effect on attendance (H3). For the home team, we can reject the null that medium-term uncertainty (chances of winning the league/qualifying for the play-offs) has zero impact p-value 0.0019). However, for the away team, we cannot reject the null (p-value 0.75). Note that the home team effect, while statistically significant, is relatively small in magnitude and has less impact than short run imbalance or recent team performance. The away team's likelihood of qualification has essentially no impact on attendances.

The second column adds some additional variables that proxy for team quality, namely whether winning the league or the ERC might lead to increased attendances in the following season. We can reject the null of zero effect for home team for both ERC (p-value<0.0000) and Pro14 (p-value <0.0000). In the case of the away team, the null is borderline rejected for both ERC (p-value 0.0691) and Pro14 (p-value 0.0740). Winning the league or the ERC has significant positive effects on teams' home attendances for the following season, whereas the corresponding effects for the away team were smaller in magnitude and of borderline significance. It should also be noted that including the championship dummies renders the medium-term uncertainty variables insignificant. This is not surprising as both measure team quality.

The third column of Table 7 looks at the impact of various policy measures that are under the control of league authorities.

The results show that derby matches (between teams from the same country) have a significant effect on attendance (p-value<0.0000), controlling for competitive balance and other team characteristics (H4). As an attendance (and revenue) boosting measure, generating more derby matches seems an effective strategy. The magnitude of the effect is striking and higher than the competitive balance measures.

The results also support ~~the hypothese~~H5 that playoffs have a ~~have a~~ positive effect on regular season attendances ~~(H5) because they increase the number of matches that have championship significiance~~ as postulated by Fort & Quirk (1995) and Williams (2012). The null of zero effect is decisively rejected by the data (p-value 0.0014). The introduction of play-offs ~~in 2009/10~~ had the expected positive impact, increasing attendances by approximately 15% on average across all games controlling for other team characteristics.

Our results also show that attendances are affected by the day of the week on which a match is played (H6). Attendances at Sunday matches were significantly lower (p-value 0.001) than for Saturday matches (the excluded category) vindicating the decision to move away from Sunday matches (Thornley, 2016). [14] Games played over the Christmas/New Year period attract higher attendances. These scheduling effects are statistically and economically significant being of a similar order of magnitude to having playoffs in the league.

H7 asserted that scheduling matches on international match weekends is likely to negatively affect attendances. In the case of the home team we can reject the null of no effect (p-value 0.0110) but cannot reject it for the away team (p-value 0.7167).

The results indicate that scheduling is an obvious way the league can have a positive impact on attendance and revenue. For example, scheduling a match between two teams from the same country on a Saturday, avoiding a clash with an international match with play-offs to decide the championship, would result in an attendance that was higher than otherwise by a factor of $\exp(0.334+0.148_{[A1]})$. This amounts to 4,417 extra spectators at an average attendance of 7,241. This implies that quite significant revenue effects are under the control of league authorities.

These results confirm that several policy changes have had significant positive effects on attendance even controlling for competitive balance, country effects and (country-specific) secular trends in attendance.

The null hypothesis that live broadcasts have a negative effect on attendances (H8) is decisively rejected by a one-sided t-test (p-value<0.0000). Broadcasting a match live actually increases attendance by 23% approximately, although this may reflect sample-selection problems (see section 6 below). ~~While this result might appear counterintuitive, Cairns et al. (1986) point out that there is little empirical support for the claim that live broadcasts negatively affect attendances.~~ Crucially it suggests that the two main revenue streams for Pro 14 are not in conflict. We discuss broadcasting revenue in detail in section 6 below.

The Welsh teams adopted a salary cap in 2013/14 in response to ongoing financial losses. This resulted in a significant outflow of players to EPR and Top14 clubs which were subject to much higher salary caps (Hogan & Massey, 2018), i.e. a decline in team quality. Dietl et al. (2009) find that league wide salary caps reduce aggregate league talent (quality). They also consider a scenario in which salary caps are only binding on large market teams in which case the impact on quality depends on fans preferences as between aggregate talent and competitive balance. ~~Where there is competition between leagues as in the Palomino and Sakovics (2204) model described earlier, the unilateral adoption of a salary cap by one league might be expected to result in~~ ~~would also suggest that unilaterally capping salaries would lead to~~ a loss of talent to rival leagues, i.e. a decline in quality. We ~~therefore~~ included an additional salary cap dummy

to test whether ~~a decline in team quality due to the~~ introduction of a salary cap might explain Welsh teams' failure to increase attendances as illustrated in Figure 2, given evidence that team quality affects attendances. The data rejects the null of no effect (p-value 0.0032). A home team salary cap had a statistically significant negative impact on attendances. It is about the same order of magnitude (but opposite sign) of the introduction of playoffs.

~~Our results show that a home team salary cap had a statistically significant negative impact on attendances. It is about the same order of magnitude (but opposite sign) of the introduction of playoffs.~~

6: **Broadcasting.**

Pro14 broadcast revenue was traditionally limited due to the small broadcast markets in Ireland, Scotland, and Wales. Prior to 2018/19, Pro14 coverage was divided among several national, mainly free to air, broadcasters, who tended to concentrate on their own local teams. Diverse kick-off times and the lack of a highlights package of all of the weekend's matches did not facilitate the creation of a coherent narrative (Massey, 2019).

In 2014/15 the league's status was enhanced when Guinness became its main sponsor, and it secured a broadcast deal with Sky. The Pro14 deal enabled Sky to fill a gap in its rugby coverage after it lost its EPR broadcast rights to rival pay-tv operator BT Sport (Massey, 2019). This increased Pro14 broadcast revenue to almost £10 million per annum, £5.5 million of this coming from Sky and the balance from national broadcasters. At that time, the EPR deal with BT Sport was worth £152 million over four years while the Top14 had just concluded an agreement a new deal with Canal+ which doubled its broadcast revenue to £60 million per annum (Rees, 2014).

By 2016/17, Pro14 broadcast income had reportedly risen to £13 million. The addition of two South African teams in 2017/18 reportedly almost doubled Pro14 broadcast revenue (Massey, 2019). In April 2018, Pro14 announced a deal with UK Pay-tv broadcaster Premier Sports for the live broadcast of all Pro14 matches. This increased Pro14 broadcast revenue to £30 million, (Doel, 2018), although this amounts to just £2.5 million per team. Figure 3 shows that total broadcast income and bonus payments received by the Irish and Welsh teams from their

participation in the Pro14 and ERC increased from approximately £3 million in 2005/06 to almost £12 million in 2018/19. [15]

Figure 3 near here.

The addition of South African teams has certainly boosted Pro14 broadcast income. ~~The Pro and the league had previously s in the past~~ considered the possibility of adding franchises in the US and in other European countries as a way of further increasing broadcast revenue (Rees, 2017). The performance of the Pro14 contrasts with SLE which, despite attempts at geographic expansion, has struggled to grow beyond its traditional heartland in the North of England (Wilson et al., 2015 and Read et al. 2021). Its top division comprises 13 clubs located in Lancashire and Yorkshire and one French team, while a London based franchise has struggled financially and currently plays in the second tier. The scope for future geographic expansion of the Pro14 may be limited. There are clear logistical problems involved in teams undertaking a round trip of more than 16,000 kilometres on a regular basis to play matches. ~~[16]~~ The South African teams' inability to participate in 2020/21 due to the Covid-19 pandemic further illustrates the potential problems involved in such a model.

7: Financial Performance.

Arguably, the ultimate test of a league's performance, is whether it is financially viable. The move to professionalism resulted in serious financial problems for Rugby Union in Ireland, Scotland and Wales. Since its launch several many Pro14 teams have struggled financially and several have gone out of business.

The SRU was forced to close two of its four regional professional teams in 1998/99. It relaunched its Borders franchise in 2004/05 only to close it again after three seasons having ~~The SRU~~ sought, unsuccessfully, to find joint venture partners for its three Pro14 franchises. It sold the Edinburgh franchise to a private business consortium in 2006, but subsequently bought it back. In 2016 the SRU announced that it was prepared to sell its two Pro14 teams (Massey, 2019), although as of December 2021 it had not done so.

Nine professional teams in South Wales proved unsustainable. The Welsh clubs rejected WRU proposals for a vertically integrated structure, with four regional franchises similar to Ireland, but agreed in 2003 to create five regional teams through a series of mergers/joint ventures

(Collins, 2015). The WRU had to take a 50% stake in the Newport Gwent Dragons franchise when one of the proposed joint venture partners withdrew. It subsequently closed one of the new regional franchises, the Celtic Warriors, after just one season (Massey, 2019). A 2012 PWC report concluded that the four remaining Welsh teams were not financially viable, citing poor management and recruitment of overseas players on high wages (BBC Sport, 2012) although a failure to grow attendances may also have been a factor. The Welsh teams adopted a salary cap of £3.5 million per team from the start of the 2012/13 season in order to cut costs. [17] This resulted in a significant outflow of players and an increased emphasis on the development of younger players. The WRU took full control of the Dragons franchise at the end of the 2017/18 season when its joint venture partner ~~was indicated that they would~~ no longer ~~prepared to~~ finance ongoing losses (Massey, 2019).

~~None of the Irish teams have closed, although~~In 2002, the IRFU was forced to abandon plans to close down its Connacht franchise in the face of public protest ~~in 2002~~ (Thornley, 2017). ~~It~~ ~~The IRFU also~~ dropped ~~its~~ opposition to its franchises topping-up players' salaries through sponsorship deals in 2014 ~~in order~~ to prevent leading Irish players moving to ~~EPR~~English and ~~Top14~~French clubs. In 2016 ~~the IRFU it~~ reported that one of its ~~provincial~~ teams was unable to repay loans ~~made to it which it had~~ received from the IRFU (Massey, 2019).

~~One of the~~ ~~In 2010/11 the league added~~ two Italian teams ~~added in 2010/11~~ ~~but one of them~~ collapsed after just two seasons. Its replacement was taken over by the FIR in 2017 after it also experienced financial difficulties.

Detailed financial data on individual Pro14 teams is difficult to obtain. Accounting data for Irish and Scottish teams are not published as they are effectively subsidiaries of their national Unions. Income from participation in the ERC and Pro14, which is made up of prize money and their share of broadcast income from both competitions, is paid to teams via their national Unions. Irish and Welsh teams also generate revenue directly through ticket sales and commercial activities.

Information on aggregate ERC and Pro14 income of the Irish and Welsh teams is identified separately in the IRFU and WRU accounts. [18] The WRU accounts also provide details of total payments from the WRU to its franchises making it possible to calculate the net transfer from the WRU to the Welsh Pro14 teams. The IRFU accounts do not separately identify

payments to the Irish teams, although details of such payments have occasionally been disclosed in its Annual Reports.

The WRU accounts for 2019/20 indicate that the four Welsh teams received a net £25 million in funding from the WRU. [19] Net payments by the IRFU to its four teams in 2013/14, the most recent year such figures are included in its accounts, amounted to £11.3 million with total payments of £20 million to the four teams less £8.6 million income from their participation in the ERC and Pro14 (IRFU, 2013/14). It would appear that the net transfer from the IRFU has increased since then, although no specific figures have been included in the accounts (IRFU, 2018/19). [20] It was not possible to extract financial data for the Scottish teams from the SRU accounts, although they also depend on SRU funding.

Many EPR and Top14 clubs have experienced ongoing financial problems since the introduction of professionalism. Two EPR clubs, Richmond and London Scottish, went into administration at the end of the 1988/89 season due to insolvency. Wilson and Plumley (2017) report that most EPR clubs are loss making and many are heavily indebted. Noll (2007) describes how the combined effect of promotion/relegation and European competitions in soccer has led to an “arms race” with clubs overspending on players. Andreff (2015) cites ongoing losses at the majority of Top14 clubs as an example of a similar “arms race”. Rugby may need to follow soccer’s example and introduce financial fair play (FFP) rules at a European level to curb this “arms race” and control player wage inflation.

8: Potential Conflicts.

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. The Pro14 is jointly owned by the IRFU, SRU and WRU. 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. These franchises are subsidiaries of the IRFU and SRU respectively and their players are centrally contracted. New franchises were created in Italy and Wales. Three of the Welsh franchises are privately owned, the WRU having acquired full control of the Dragons franchise in 2018/19. The FIR acquired control of one of the Italian franchises in 2017 while the other is owned by the Benetton company.

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. There are several examples which illustrate these points.

The unilateral decisions by the SRU and WRU to each close one of their Pro14 franchises may have been rational from the viewpoint of both Unions. However, these decisions failed to take externalities into account - reduced fixtures and revenue for the remaining teams - 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 (Williams, 2012). 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). A club run league might have retained the Borders and Celtic Warriors rather than replace them with two Italian franchises which have performed poorly.

[21]

“The Italian market has not really delivered, not helped by the poor performances of the Italian teams and what appears to be a lack of investment in those teams.” (IRFU, 2015/16, p.9).

This may ~~reflect suggest~~ a “free riding” problem which can arise in closed leagues, i.e. poorly performing teams face no risk of relegation. This may have been compounded by the fact that up to 2014/15 the Italian (and Scottish) teams were guaranteed qualification for the ERC.

The IRFU's clearly stated priority is its international team, and it has consistently limited the number of matches that Irish international players can play in the Pro14. It has been claimed that the league has been undermined as a result of the Irish franchises fielding weakened teams (Massey, 2019). The Welsh teams have been criticised in the past for prioritising Anglo-Welsh cup competitions over the Pro14 raising concerns that they would prefer participation in an Anglo-Welsh league. In 2005, the IRFU and SRU threatened to expel the Welsh teams for participating in Anglo-Welsh competitions (Massey, 2019).

Welsh rugby was riven by a long-running battle for control between the clubs and the WRU. The clubs rejected WRU proposals for vertical integration (Collins, 2015) and opposed WRU proposals for centralised player contracts for many years before eventually accepting dual contracts for Welsh international players (Massey, 2019).

9: Conclusions.

Based on a number of measures the Pro14 has been reasonably successful. Attendances have increased over time, particularly in Ireland and, more recently Scotland. Our analysis indicates that dropping Sunday matches, the introduction of play-offs, and the creation of more local derbies have all boosted attendances. Further reducing fixture clashes with international match weekends would have a small positive impact on attendances, but given rugby's crowded fixture calendar, the scope for this may be limited. ~~The Pro14 has increased broadcast revenue through geographic expansion into larger broadcast markets, notably through the addition of South African teams and a UK rights deal with Premier Sports.~~ The Pro14 displays a reasonable level of competitive balance while Pro14 teams have managed to compete successfully in the ERC with EPR and Top14 teams, thus far, providing some support for advocates of mergers of smaller European soccer leagues. The strong performances of the Irish teams suggests that the IRFU model of four regional teams with players on centralised contracts has been successful and this may represent a topic for future research. The Pro14 has increased broadcast revenue through geographic expansion into larger broadcast markets, notably through the addition of South African teams and a UK rights deal with Premier Sports.

The Pro14 has struggled financially, particularly in its early years, with several team failures. Despite increased broadcast revenue, Pro14 teams remain heavily dependent on their national Rugby Unions for financial support in order to compete with the two larger country leagues. The financial problems faced by teams in all three major European leagues begs the question of whether rugby needs to follow soccer's example and introduce FFP. Longer-term the ability of the Pro14 to compete with the two larger country leagues is likely to depend on such measures. Conflicts of interest resulting in sub-optimal outcomes from an overall league point of view may be inevitable given the Pro14's composition and governance structures.

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[1] ~~Originally launched as the Celtic League, it was re-named on several occasions. It operated as the Pro14 between 2014/15 and 2020/21 and that is the name used throughout this paper. The Pro14 is one of the three main European Rugby Union leagues along with English Premiership Rugby (EPR) and the French Top14.~~ In 2021/22 the Pro14 became the United Rugby Championship (URC).

[2] In 2020 CVC acquired a 25% shareholding in Celtic Rugby.

[3] Much of the discussion in this section is based on Massey (2019) unless otherwise stated.

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4] Despite its name, the ERC is limited to teams from England, France, Ireland, Italy, Scotland, and Wales. English and Scottish teams did not participate in the inaugural season of the ERC.

[5] The league increased to 16 teams the following season when the SRU re-launched the Borders team, which it had closed three years earlier.

[7] *Union royale belge des sociétés de football association ASBL v Jean-Marc Bosman*, Case C-415/93, ECR1995 I-04921. A subsequent judgment gave players from rugby nations like South Africa, Fiji, Tonga, and Samoa similar eligibility to that of EU citizens. *Deutscher Handballbund eV v Maros Kolpak*, case C-438/00, ECR 2003 I-04135.

[8] ~~We exclude the first two seasons as teams only played 3/4 home league matches in those years. Several matches in 2019/20 and virtually all matches in 2020/21 were played behind closed doors due to Covid 19.~~

[9] We exclude the first two seasons as teams only played 3/4 home league matches in those years. Several matches in 2019/20 and virtually all matches in 2020/21 were played behind closed doors due to Covid 19.

[10] ~~Data was obtained primarily from www.pro.14.rugby supplemented with data from <https://www.espn.com/rugby/scoreboard/>. We obtained additional data on broadcast schedules from match previews. Attendance data was not available for two matches giving us a total of 1,948 observations.~~

[11] It is determined by the ratio of the number of points a team is behind the top team (pre 2009/10) or the final playoff place, to the number of points potentially still available. The coefficient becomes zero when winning the league/qualifying for the playoffs is no longer possible.

[12] 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 are not reported here but are available upon request. For space reasons we do not report the coefficients on fixed effects and interactions, but these are available upon request.

[13] Formally we can reject normality of the Attendance variable with p-value of 0.00004 and cannot reject the normality of the log variable with a p-value of 0.6.

[14] Mid-week matches also attracted lower attendances than Saturdays although our sample involves very few mid-week matches and the result was statistically insignificant.

[15] The Welsh data for earlier years also includes income from participation in Anglo-Welsh cup competitions.

~~[16] Only half the European based teams play both South African teams away in any season and these fixtures are scheduled over consecutive weekends. The South African teams play away matches in Europe over consecutive weekends.~~

[17] EPR and the Top14 introduced salary caps in 1999/00 and 2010/11 respectively (Hogan & Massey, 2018). In both cases the caps were significantly higher than the Welsh salary cap.

[18] The SRU accounts combine this revenue with some other income streams.

[19] The accounts show that the WRU received £7.1 million in payments in respect of the Welsh teams' participation in the ERC and Pro14, £1.8 million of which related to its wholly owned Dragons franchise. The Dragons' operating costs amounted to £7.1 million while the WRU paid £25 million to the other three Welsh indicating a net transfer of £25 million to the four teams.

[20] The 2019/20 IRFU Annual Report noted that its Pro14 franchises were unable to pay their share of player salaries due to the lack of attendances as a result of Covid-19.

[21] The SRU and WRU were subsequently reported to be unenthusiastic about retaining the Italian teams (Massey, 2019).